Capital District Transportation Authority
Park & Ride/Express Bus Study

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Prepared for:
The Capital District
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Prepared by:
BFJ Planning
115 Fifth Avenue
New York, NY 10003

In association with:
Russell Design
Stantec
Steadman Hill Consulting
Urbanomics

EXECUTIVE SUMMARY

Background

The Capital District Transportation Authority (CDTA) sponsored this study to provide a regional framework for recommended park & ride/express bus improvements and expansion. The primary objective for the program is to provide attractive alternatives to shift single occupancy motorists into high occupancy vehicles (HOV's) and bus transit services. By providing a network of park & ride lots located at key strategic points in the region, residents will have convenient alternatives to their personal motor vehicle for commuting by either carpooling with others or using public transit, and they will also be able to reduce their commutation costs. Improving park & ride services will have the added regional benefit of reduced congestion and greenhouse gas emissions through a reduction in vehicle miles traveled.

The success of express bus and carpooling on the major commute corridors requires a system of facilities that are well integrated into both the surrounding suburban communities as well as the regional transportation network. CDTC completed a park & ride study of the Northway corridor in the mid-1980's, which resulted in the creation of many of the existing facilities. Since that date, park & ride facilities have been implemented on an *ad hoc* basis. A 2005 study commissioned by CDTA included an inventory of the park & ride lots at that time and a survey of users.

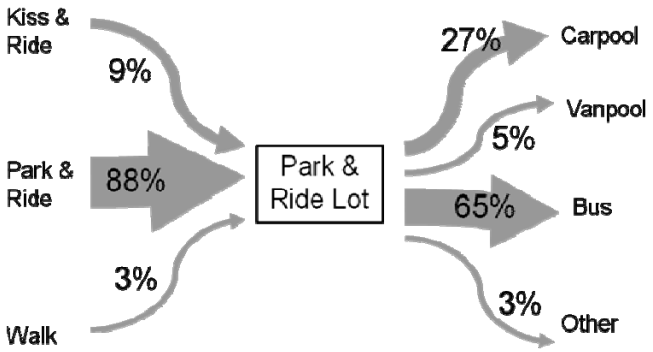
Existing Park & Ride System

This study covers the four counties served by the CDTA as well as the nearby counties, as they have significant commuting populations or existing private transit service. The Study Advisory Committee helped identify 38 existing park & ride lots in the region. Lots studied include those in the Capital District (Saratoga, Schenectady, Albany and Rensselaer Counties), as well as nearby counties including Warren, Fulton, Schoharie, Greene and Columbia. A site inventory and user survey was conducted at each of the lots to establish a baseline of how the lots currently operate and to understand the commuting pattern of lot users. A detailed user survey/lot attribute report and a photo inventory can be found in Technical Addenda A & B, respectively.

Levels of transit service at the park & ride lots vary from lot to lot. Some lots are served by bus transit and others are intended to only serve as a place for carpool and vanpool staging. 23 of the 38 park & ride lots surveyed had some degree of express bus service[1] to Albany, either provided by CDTA or by another bus operator. Twenty-three of the 38 lots are shared-use meaning that the parking spaces are shared with another primary use such as a shopping mall or church.

[1] Express transit service is defined as those routes which spend a major portion of their route along a highway.

The survey found that there are approximately 1,261 daily users of the park & ride lots in the study area. The park & ride lots accommodate a wide variety of users, though most use the lots to access transit services or as staging locations for carpools/vanpools. The figure to the right shows the breakdown of travel modes to and from park & ride lots.



Surveys showed that 95% of trips were work related and that 85% of the riders were headed toward Albany as opposed to other cities including Saratoga Springs, Troy, Colonie, Menands and Schenectady. Demographic analysis confirmed that these smaller population centers do not have a sufficient employment density to require further study with regard to improving commuter services to those areas.

The park & ride lot inventory showed that across the region, park & ride facilities are generally underutilized. On average, the lots are 33% occupied and only 9 of the lots are heavily used with average occupancies between 50% and 80%. Users of these lots comprise approximately 1% of commuter traffic during peak commute periods.

Growth Potential

Population projections to the year 2040 call for much of the population growth in the region to take place north of Albany, with Saratoga County seeing the largest amount of growth. Some growth will also take place to the west and south of the city, in Guilderland and Bethlehem. Transit propensity analysis indicates the most likely markets for service remain Albany, Schenectady and Troy. Incorporating 2040 population projections into the equations demonstrates increasing potential for ridership from Saratoga Springs and Waterford.

With more residential development, traffic conditions are likely to get worse on what is already the most congested expressway in the region. The patterns evident in the data on projected growth suggest a larger and more important role for express bus services and Park & Ride lots in the future. The NX service and the presence of numerous park & ride lots along the Northway position CDTA well to take advantage of this growth. It is likely that capacity at the existing lots will need to be expanded over time, and additional lots be brought into service. Additional trips on the NX will also need to be operated.

Framework for Park & Ride Expansion

In addition to population growth, other factors could significantly spur the need for park & ride and express bus services. The most critical factor would be a surge in gas prices. Demand for these services would also increase if Albany changed its subsidized parking policies to a more market-based approach. Improved marketing, buses, signage, and lot amenities would also attract new riders.

Although there is presently reserve capacity, the park & ride network is not prepared for a surge in demand. Even a change of 1% in the total commuting market toward transit would overwhelm the existing service capacity. If there was a surge in demand, it would increase faster than the region's ability to increase capacity.

Some of the recommendations in this report may not seem reasonable given today's occupancy levels; they should however be seen as a safeguard to potential surges in demand. Expanding publicly owned lots and negotiating shared-use lease agreements are ways to increase the capacity and improve accessibility of the park & ride network, and to provide for unexpected future surges in demand.

Dedicated lots are usually publicly owned and are therefore more permanent than shared lots. They also have the advantage of allowing greater flexibility of use. Whereas the use of shared lots may change over time, dedicated lots owned by the state have greater longevity. Dedicated lots also allow users to stay for longer time periods, overnight, or over the weekend. To maximize public investment and increase transit linkage opportunities, dedicated lots should be located no more than .75 miles from a highway interchange and should have 50 spaces minimum (.55 – 1 acre depending on grade). Dedicated park & ride lots can also be created in commercial parking lots that have more parking capacity than is needed, even during their peak-use periods. Zoning requirements in some of the CDTA area municipalities exceed the actual peak demand and result in parking areas that are never needed. These areas can become dedicated park & ride lots.

To maximize public expenditure, capital expenditure in park & ride facilities should typically be done in areas that have commuting populations. Although some cities have found that park & ride capital investment is not successful outside of 30 miles[2], demand estimates from this study have shown that Albany pulls workers from a wider area than 30 miles, especially along the Northway. In outlying areas, implementing shared lots is a more viable way to provide park & ride services to commuting populations.

Shared-use lots have the advantage that they are relatively easy and inexpensive to implement since they are based on the shared use of retail or institutional properties that have their parking demand peaks occur during hours outside the regular commuter hours (generally on Saturdays

[2] AASHTO Guide for Park-and-Ride Facilities, 2004. Pg. 21

or during evening hours). Shared-use lots are generally established through lease agreements with CDTA or NYSDOT, or they can be established as the result of subdivision or site plan approvals, which represents the least expensive way to implement park & ride lots. They generally have use restrictions that are related to the primary use of the property.

Implementing new lots often requires the participation of many different parties. The decision tree below should be used by CDTA when evaluating or implementing new dedicated or shared use lots.

Park & Ride Lot Implementation Framework

Dedicated Lots: 24/7 Parking

Lot Ownership	Implementation Action	Main Features	Express Bus Service	Funding	Maintenance	Lead Role
NYSDOT, State of NY	Designate state property, purchase parcel	Permanent, flexibility of use	Possible	NYSDOT/ CDTC	NYSDOT/CDTA for bus shelter	**NYSDOT**
NYSTA	Designate NYSTA land, purchase parcel	Permanent, flexibility of use	Possible	NYSTA	NYSTA/ CDTA	**NYSTA**
Municipality	Designate municipal land, purchase parcel	Permanent, flexibility of use	Possible	Municipal/ CDTC	Municipality/ CDTA	**Municipality**

Shared Lots: Use hours to be negotiated

Lot Ownership	Implementation Action	Main Features	Express Bus Service	Funding	Maintenance	Lead Role
Utility Co. or private owner	Lease	Duration dictated by lease, flexibility of use	Yes	CDTA/ CDTC	CDTA/ Owner	**CDTA**
			No	NYSDOT/ CDTC	NYSDOT/ Owner	**NYSDOT**
Commercial, institutional owner	Site plan condition	No/low cost, permanent	Possible	None	Owner/CDTA for bus shelter	**Municipality**
Commercial, institutional owner	Access permit condition	Low cost	Possible	NYSDOT/ CDTC	Owner/CDTA for bus shelter	**NYSDOT**
Commercial, institutional owner	Lease agreement	Low cost, duration dictated by lease	Yes	CDTA/ CDTC	Owner/CDTA for bus shelter	**CDTA**
			No	NYSDOT/ CDTC	NYSDOT/ Owner	**NYSDOT**

Recommendations for Expansion and Implementation of Lots

The patterns evident in the data on projected growth suggest a larger and more important role for express bus services and park & ride lots in the future. The NX service and the presence of numerous park & ride lots along the Northway position CDTA well to take advantage of this growth. It is likely that capacity at the existing lots will need to be expanded over time, and additional lots be brought into service. In order to optimize the public expenditure in park & ride facilities, lots should be encouraged in areas that fulfill the following criteria:

1) 10 miles or more from downtown Albany
2) Upstream of congestion
3) Near highway interchanges
4) Near areas with potential demand/expected growth

New lots should be prioritized in areas near highway interchanges outside of the 10-mile radius of Albany and still within the general commute distance. The freeway interchanges below fulfill the criteria above but do not have an associated park & ride lot. These interchanges are potential locations for future park & ride locations.

Northway: Exits 8A, 10, 13, 16, 17, 19, 21 and 22
I-90 West of Albany: Exit 29
I-90 East of Albany: Exit B2 and B3
I-87 South of Albany: 20 and 21B
I-88 West of Albany: Exits 25, 21 and 20

Expanding existing publicly owned lots should be considered for lots with high occupancies and express bus service. The report shows potential expansion plans for 3 publicly owned lots within the Capital District and 4 lots outside the district. If expanded, the Fire Road Lot at exit 9 on the Northway could include a bus loading area and a NX stop. Potential expansion programs for all of the publicly owned lots can be found in Technical Addendum C. Analysis of parcel data showed there are state owned properties near exits 11, 13 16 and 17 on the Northway. These opportunities should be explored in conjunction with links to NX service. Development of lots should be consistent with the AASHTO Guide for Park and Ride Facilities, 2nd Edition (2004).

Outreach to Local Municipalities

There are a number of ways CDTA, CDTC and/or NYSDOT can collaborate with local municipalities to expand park & ride services. Municipalities should be encouraged to incorporate ride-sharing and park & ride goals into their master plan. Master plans can be a key step in identifying shared-use lot opportunities in generic or specific terms. Master plans can also recommend that park & ride goals be considered for large commercial or residential developments. Shared-use lots can be achieved through the subdivision or site plan approval process in which they may not cost anything to the public.

Lot Amenity Recommendations

Users surveyed expressed concerns about park & ride facilities in regards to litter, safety and signage. Users at many of the lots requested more frequent emptying of trash receptacles and the addition of recycling bins at each lot. Lots where users responded that they didn't feel safe were often those that had debris or graffiti. Dissatisfaction with snow removal was often cited; however, it should be noted that the surveys were distributed during the same week as a heavy snowfall, which may have influenced this response. When asked about preferred improvements, users frequently asked for: posted bus schedules, covered waiting areas (at facilities without shelters), better signage, better security, lighting improvements, emergency telephones and bike racks.

Improving basic amenities such as bus shelters, transit information, and pedestrian and bicycle facilities is an important way to improve the user experience and attract "choice" riders. All lots with express bus service should have entrance signage and appropriately placed bus shelters. The table below lists the number of lots which are prioritized (high and medium priority) for various lot improvements.

Lot Improvement	Bus Shelter	Bicycle Rack	Posted Bus Schedule	Highway Signage	Entrance Signage
High Priority Lots	9	7	16	7	7
Medium Priority Lots	6 + 3 (repairs)	9	--	17	13

Signage and Marketing Recommendations

Clearly indentifying each park & ride location off highways leading in and out of the Capital District is a key wayfinding initiative. Investing in signage at park & ride lots is a high priority for the study as it is a relatively low cost way to promote existing services. There is currently a paucity of signs that direct freeway users to park & ride lots. Seven exits along the three major thoroughfares are prioritized for highway park & ride signage. Signage at exits with express transit park & ride lots should have a logo on the sign indicating this additional service.

Implementing the recommended signage and wayfinding program will help to:

1) Provide easy recognition, both from the highway and when approaching the lots themselves.
2) Create a uniform and predictable system appearance that will attract riders.
3) Provide for flexibility between lots, ease of fabrication and installation.

With regard to branding, CDTA should create a regional express system map that includes all available services from every provider and every CDTA express route. The map should include all pertinent information including fares and CDTA's LINK program. Other carriers should be identified as "CDTA partners" to show their connection to the Authority and its services, but still maintain their own identity. This express map could be included as an additional map on the

reverse side of CDTA's existing system map which is planned to be redesigned in 2012. This information should also be accessible on the web. This would be hosted on Capital Moves and 511NY, while CDTA and other providers would be able to show their own routes on their websites. The Capital Moves site functions as an umbrella with information about several of the various programs, including Park and Ride lots and express services. We recommend CDTC and NYSDOT collaborate to enter all of the region's express bus routes into 511NY's database for use in online trip planners.

CDTA should make park & ride/express bus services a more prominent part of the cdta.org website. At present, a link to park & ride information does not appear on CDTA's homepage. If this is to be promoted as a serious initiative, a link should be present as soon as the visitor opens the site.

Express Bus Recommendations

Improvements to the express bus services are intended to make service competitive with the private automobile. In order to draw "choice" riders onto the bus, services must be made more convenient in terms of travel time, comfort and cost.

The scope of the study called for an examination of all travel markets in the Capital District region where express bus service could be successful. This analysis concluded that the commuting market to downtown Albany is the best, and most likely the only market for premium express service. Downtown Albany has an employment density that is triple or more than that of other regional cities (Schenectady, Troy, Rensselaer), and at least double other sections of Albany (Medical Center and State Campus/UAlbany).

Another step of the study was to consolidate a comprehensive list of existing express services in the region, data not readily available to the public from a single source. All of the best markets in the region have at least some express service, from CDTA or another operator. However, most of these express services offer a very low level of service with just one or two trips in each peak period. These routes already serve the most conveniently located park & ride lots in their respective corridors, and none of the associate lots are currently filled to capacity; most of them are less than half full.

Generally, it is recommended that the threshold for express and commuter services have a minimum of three trips in each period. Thirty riders per trip is an ideal ridership standard as it would establish a threshold that a service must be well over half-full to be considered productive. Because of this, most of the recommendations prioritized in the study focus on the larger markets for express transit. This includes service along the Northway (NX Service), to Troy (Route 35X), and the I-90 Thruway (Route 530). The table below summarizes short, medium and long term recommendations for each of these corridors.

Express Service Recommendations

Route	Short Term	Medium/Long Term
Northway Express (NX)	• Reroute certain runs to improve service • Determine which stops NX will access • Eliminate service to Rensselaer Rail Station • Study routing in Saratoga Springs (Zone 4) • Eliminate reverse trips • Extend Service to downtown glens Falls • Eliminate 10-minute guarantee	• Consolidate service at Exits 11 & 12 • Increase service to heavily utilized park & rides • Restructure fare structure • Improve NX commuter coaches
Albany-Troy I-787 Service (Route 35x)	• Minor schedule adjustments	• Extension to Cohoes • Additional 35X trips • Extension to Brunswick Center
Thruway (I-90) Services (530 Series)		• Eliminate 531 after advancements to BusPlus • Additional trips on 530 route

The recommended short, medium and long term and schedule modifications to the NX routes are strategic ways to improve service and increase ridership. The following are guiding principles for the recommended service design changes for each phase:

1. Service operating from Ballston Spa should access Exit 12 park & ride only.
2. No service will access more than two park & ride lots in one trip.
3. Due to distance, trips from Exit 15 park & ride or West Marion park & ride should access one additional park & ride.
4. Amount of service should be proportional to the amount of current and projected usage.
5. Number of evening and morning trips should be equal for each area served.
6. To reduce crowding of buses at ESP and other downtown bus stops, a maximum of four NX trips should be provided at one time.
7. Arrivals and departures should be based upon work starts and ends in downtown, which are every half-hour.
8. Every major park & ride (Exits 8, 9, 12, and 15) should have at least one trip for every major work-start (7:30am-9:00am) and work-end (3:30pm-5:30pm).
9. Running times of trips not entering intermediate park & rides should be shorter than those that have to exit and reenter the Northway.
10. All trips traveling in the same area should travel identical route patterns.
11. Services should only access major bus stops and not all local stops.

This study recommends that the buses used on CDTA's 530-series routes be replaced with lowfloor suburban-style coaches with WiFi compatibility. The increased level of service and comfort would justify a higher fare then CDTA's other services. A fare increase is supported for all 500 series buses. A fare restructuring and reduced fares for 10 and 40-trip tickets are recommended.

The 35x is the shortest express route operated by CDTA, running between downtown Troy and downtown Albany. It is a heavily used route and has the second highest level of service among express routes in the region. Suggested improvements to the 35X would extend the route beyond Troy to serve communities to the north and east, such as Cohoes which is currently underserved by express bus services. Service could ultimately be extended along Route 7 to Brunswick Center. It should be noted that this service would help to build a ridership market for a future BRT line between Cohoes, Troy, and Albany.

It is recommended that CDTA review upgrading the Thruway corridor to have express services comparable to an NX-style of service. There are currently 13 peak inbound trips operating on this corridor which would create a "critical mass" for an upgraded brand, but they are divided among multiple CDTA routes and private carriers. At least five AM and PM peak trips could be operated which work in cooperation with services provided by the private carriers. The service would likely be branded the "TX" to parallel the NX.

The 530 provides a unique service that does not duplicate other routes and, among CDTA routes other than the NX, provides the longest express trip to downtown Albany. It is the most productive of the 530 series and there is likely demand for more trips throughout the day. This route currently does not meet the minimum service level for an express route (three trips in both the AM and PM peak). Additionally, after the additional improvements are implemented CDTA should monitor ridership patterns on the 531 and consider the elimination of the service to remove competition with BusPlus. The resources from the express buses could be reallocated to the BusPlus line to further improve its service.

Over time, the relationship between CDTA and its partners could be more solidified to create a system that looks and functions as a regional system. This would not necessitate that CDTA actually operate all of the service in the region but it could involve operation of some routes under contract to CDTA and the use of CDTA vehicles for other services. In the short term, CDTA should lead the effort to partner with private operators to consolidate scheduling information and to create a regional express system map. Other carriers should be identified as "CDTA partners" to show their connection to the Authority and its services, but still maintain their own identity.

Bus Priority Treatment Recommendations

Part of the future advantage of the NX and its ability to capture more of the commuting market from the north sector hinges on the trend in traffic congestion on the Northway and the ability of NX buses to bypass the traffic through the use of shoulder running and other priority treatments. The study reviewed the following "low cost" opportunities to provide near-term travel time advantages for express bus routes:

- Queue-jumpers (short exclusive lanes approaching an intersection)
- Transit signal priority
- Exclusive access or turn lanes into/out of park & ride lots
- Downtown bus lanes
- Bus use of highway shoulders.

Analysis by CDTC has found that the most consistent congested segment of the regional highway system occurs on the Northway between Exits 7 and 8, with lower degrees of congestion between Exit 7 and the junction with I-90. The study recommends that buses be permitted to use the shoulder along this stretch during congested periods. As in other states, buses would only be allowed to use the shoulder lane when traffic is moving slower than 35 mph, and buses would not be permitted to travel more than 15 mph faster than general traffic.

It should be noted that allowance of Bus-on-Shoulder would require a NYSDOT policy change, and a number of topics remain to be studied.

Economic Benefits

Park & ride facilities would normally not break even as a financial investment. However, in terms of overall societal costs, by reducing the need to construct more expensive downtown parking facilities and by reducing highway congestion, these costs can be balanced. The table below summarizes the benefits of doubling the existing park & ride users.

Economic Benefits of Park & Ride System Improvements (in Northway Corridor)

Scenario	Person Hours Saved Per Year (1,000 hrs)	Dollars Saved Per Year on Travel Time (millions)	Vehicle Miles Saved per Year (million miles)	Vanpool Miles Added per Year (million miles)	Bus Miles Added per Year (million miles)	Gallons of Fuel Saved per Year (1000's gallons)	Dollars Saved Per Year on Fuel (millions)	Total Dollars Saved per Year (millions)
Doubling of Existing Users	74	$ 1.58	5.09	0.07	0.29	136.8	$ 0.48	**$ 2.06**

This table shows that the annual economic benefit of a doubling of the park & ride users is significant and warrants an investment by the governing institutions. This study analyzed a doubling of the current park & ride users. The table below summarizes the benefits. The most significant annual recurring costs are the incremental subsidies for the additional commuter bus service. If we take this into consideration, the net economic annual benefits would be $1.8 Million.