Practical Approaches for Making ADA Paratransit Facility Ownership and Location Decisions

Devajyoti Deka, Ph.D. (Corresponding author)
Assistant Director, Research
Alan M. Voorhees Transportation Center
Rutgers, The State University of New Jersey
33 Livingston Avenue
New Brunswick, NJ 08901
Tel: 848-932-2875
Fax: 732-932-3714
Email: ddeka@ejb.rutgers.edu

Peter J. Jin, Ph.D.
Assistant Professor
Department of Civil and Environmental Engineering
Rutgers, The State University of New Jersey
CoRE 613, 96 Frelinghuysen Road
Piscataway, NJ 08854-8018
Phone: 848-445-8563
Fax: 732-445-0577
Email: peter.j.jin@rutgers.edu

John F. Betak, Ph.D.
Managing Member
Collaborative Solutions LLC
726-23 Tramway Vista Dr., NE
Albuquerque, NM 87122
Tel No. 505-238-8143
Fax No. 888-522-7442
Email: john@collaborativesolutionsllc.com

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Paratransit facilities are typically used for vehicle parking, repair, and maintenance. When transit agencies began to provide paratransit service in the mid-1990s pursuant to the Americans with Disabilities Act (ADA) of 1990, a few established their facilities in agency-owned land, but many others decided to lease facilities from landlords through private service providers. While some agencies have continued to lease, a few began owning facilities during the past 10-12 years due to the high cost of leasing, lack of control over facilities, inappropriate location, and poor upkeep of leased facilities. New Jersey Transit has leased all of its ADA-complementary Access Link paratransit facilities since the mid-1990s, but its ADA Services division is currently assessing the possibility of owning facilities due to the high costs associated with changing locations of leased facilities necessitated by rapid ridership growth. This research was conducted to assist New Jersey Transit in determining whether it should own one or more of its paratransit facilities. The research was conducted with two broad objectives: (a) to compare the costs of owning and leasing facilities, and (b) to identify areas that are both desirable and potentially permissible for facility location. It involved interviews with the ADA division officials from 11 transit agencies nationwide, forecasting of Access Link demand, comparison of ownership and leasing costs up to horizon year 2040, and a GIS-based accessibility analysis to identify areas appropriate for facility location. Recommendations were made based on the findings.
INTRODUCTION

In the years following the Americans with Disabilities Act (ADA) of 1990, transit agencies nationwide began to provide ADA-complementary paratransit service to persons with disabilities who have difficulty using fixed-route transit. Such services are typically provided in areas where fixed-route buses and trains are available and their operating hours generally correspond to the fixed-route service hours. Similar to conventional buses, the ADA paratransit vehicles are stored and maintained at facilities that have large parking lots and structures for vehicle maintenance, dispatching, and administrative uses. However, in contrast to conventional bus facilities, which are usually owned by transit agencies, the paratransit facilities are often leased by agencies through companies that provide service on a contractual basis for a given number of years. New Jersey Transit currently leases all of its six ADA paratransit facilities through private service providers.

It is important to study transit agencies’ ADA paratransit facility owning/leasing decisions and location considerations for several reasons. First, while fixed-route transit is a well-established service for most agencies, ADA paratransit is still evolving. Paratransit demand is growing faster than conventional transit in most places. Second, the cost of paratransit service per revenue mile and trip is significantly higher than conventional transit. Third, while owning conventional bus facilities is typical for transit agencies, many transit agencies have not yet evaluated the costs and benefits of owning facilities. Finally, location of paratransit facilities is highly important because vehicle runs depend on customer requests for pick-ups and drop-offs on any given day.

This research serves two broad purposes. First, it examines the benefits and costs of New Jersey Transit owning one or more facilities for its ADA paratransit service, known as Access Link. Second, it helps to identify appropriate (i.e., desirable and potentially permissible) locations for facilities so that New Jersey Transit can make more informed decisions about facility ownership in different parts of the Access Link service area. To fulfill these objectives, several tasks were undertaken, including (a) a literature review and practice scan, (b) site visits to the existing Access Link facilities and discussions with facility managers, (c) structured telephone interviews with ADA division officials from 11 transit agencies nationwide, (d) forecasting of future size of Access Link facilities based on past ridership and fleet growth, (e) cost analyses to compare owning and leasing options for several existing Access Link facilities, (f) analyses of property sales data from a Costar® database to assess costs and characteristics of industrial properties potentially suitable for paratransit facilities, and (g) a GIS analysis to identify appropriate locations for facilities in different parts of the service area.

New Jersey Transit has provided Access Link service since the mid-1990s. Since the beginning, the service has been provided through private contractors using facilities leased from landlords. The service is provided in ¼ mile buffers along local bus routes in 18 of New Jersey’s 21 counties by using approximately 450 revenue vehicles. The entire service area is divided into five service regions and six operating regions. Each operating region currently has a single facility, with the exception of one region that also uses a small satellite facility with no provisions for vehicle maintenance or other activities. Figure 1 shows the boundaries and facility locations for the six Access Link operating regions in December 2015, the time when this research was completed. Figure 2 shows the typical maintenance area and parking area in Access Link facilities. More detailed information about Access Link can be found in two recent studies (1-2).
This research was motivated by a number of issues associated with leasing Access Link facilities through private service providers. When this research was completed, the service providers in all regions operated with three-year contracts with four additional optional years, totaling a maximum of seven years under each contract. It is customary for bidding companies to first identify potential properties that can be converted to Access Link facilities, receive approval from New Jersey Transit on the identified properties, come to agreement with landlords, and then bid for a three-year contract that can be extended up to seven years. The winning bidders subsequently sign leases with the landlords for the duration of the contracts. Since no company is assured of winning consecutive bids in any region, leases are never longer than the contract period. Since the objective of companies is to provide service only during the contract period, they have no motivation to lease properties that are larger than the size required at the conclusion of the contract. For these reasons, as well as for rapid increases in service demand and a high
growth of revenue vehicles in all regions, almost always facilities had to be moved from one location to another at the conclusion of a contract. Such changes in location involve significant costs to New Jersey Transit due to the need to convert generic properties to Access Link facilities since new vehicle maintenance equipment has to be installed, building interiors have to be redesigned, buildings have to be retrofitted with electronic technologies, and parking lots have to be paved or repaired. Demolition of infrastructure at the end of contracts is also expensive. Valuable time is wasted since service providers have to make a substantial effort to identify desirable properties, come to agreement with property owners regarding lease terms, receive permission from municipalities, and make the necessary modifications to convert generic properties to Access Link facilities.

FIGURE 2 Typical maintenance area (left) and parking area (right) of Access Link facilities.

LITERATURE REVIEW AND PRACTICE SCAN
A literature review and a practice scan were undertaken to identify (a) approaches to determine whether transit agencies should own or lease paratransit facilities, and (b) approaches to decide where paratransit facilities should be located. The practice scan included web searches with relevant keywords and exploration of transit agency web sites. The literature search was conducted using Google Scholar, the International Transport Research Documentation (TRID) database of the Transportation Research Board, and the Rutgers University library system. Unfortunately, the practice scan did not discover any documented approaches by transit agencies to make facility ownership or location decisions.

The literature review was useful only to a limited extent since no studies were found that directly dealt with ownership or leasing of paratransit facilities. However, a few studies were found in the general real estate context that shed light on the issue at hand. For example, Ebert (3) evaluated the advantages and disadvantages of owning and leasing properties in the corporate sector and concluded that leasing is often preferred because it allows companies to avoid taking large loans. However, according to the study, leasing is not a sound long-range financial strategy since it is more costly than borrowing in the long run. Furthermore, leasing provides neither resale benefits nor the opportunity to redevelop properties. However, Allen et al. (4) argued that leasing is often beneficial to corporate shareholders. In a related study, Wheaton et al. (5) provided insights that are useful for real estate decision-making in all sectors. According to the study, although real estate decisions such as owning and leasing are often made based on past performance of markets, such decisions should be based on forward-looking methodologies since
markets are more often affected by external factors than by historical factors. A major takeaway from the study is that past trends alone cannot provide a true assessment of future real estate markets. In another study, Simons (6) compared real estate management approaches of the corporate sector with public sector approaches and concluded that public sector approaches were less robust in evaluating financial consequences of investments.

While no study was found that dealt with ownership decisions of transit facilities, a limited number of studies were found that dealt with their location issues. Boyaci and Geroliminis (7) addressed facility location for demand response transit and emergency response services in Athens, Greece, by using a probabilistic method to address uncertainties related to service demand and travel time. Jones (8) considered both paratransit service and facility location, but primarily focused on the location of social service facilities in relation to the availability and cost of paratransit service instead of examining the location of paratransit facilities in relation to service demand. Thus, the study was primarily about the destinations of paratransit users rather than the locations from which paratransit vehicles operate.

The American Public Transportation Association (9) provided some guidelines for transit operating and maintenance facilities that can be pertinent to both bus and paratransit facilities. Although the study described many important considerations, it did not provide guidelines or examples for location analysis that can be used to identify desirable facility locations. In a study about bus facility location in British Columbia, Canada, Uyeno and Willoughby (10) concluded that deadhead or non-revenue time is one of the most important considerations for facility location. In the context of rural transit in Texas, Beruvides et al. (11) examined the Regional Maintenance Center (RMC) concept, which can minimize maintenance costs due to centralized monitoring of the quality and costs of repairs at a single facility.

Although studies directly addressing transit facility location are scarce, a large number of studies have addressed location of facilities in general. In one of those studies, Orloff (12) pointed out that facility location can have both positive and negative effects on the surroundings. While a high level of access to a facility is usually desirable, some facilities may also have negative effects on those living nearby. It can be inferred from a large number of studies (13-17) that the considerations for public facility location are different from private facility location. While the location of private facilities (e.g., private warehouse) is almost entirely dependent on efficiency, for the location of public facilities (e.g., playground, fire station, or transit facility), it is important to consider both efficiency and equity. Taken together, these studies indicate the importance of maximizing total social welfare, instead of profit, for public entities. The concept of total social welfare necessitates consideration of a large number of variables, including number of users (or beneficiaries) of the facility, land use impacts, and environmental impacts.

In sum, the literature review showed that issues related to paratransit facility ownership have been rarely studied. However, some studies in the general real estate context provide some insights about the advantages and disadvantages of owning properties compared to leasing. Some of these studies also showed that property ownership decisions should not be based entirely on past performance of the real estate market. Studies on approaches to determining location of paratransit facilities are also rare, but a few studies provide insights about the considerations for bus facility location. The review of literature in the general context showed that the location of public facilities, including transit facilities, have to be based on the principle of maximizing social welfare. One can infer from these studies that minimizing deadhead trips and being near the center of the service area could be two guiding principles for transit facility location.
SITE VISITS AND INTERVIEWS
Key observations from two key tasks are summarized in this section: (a) site visits and discussions with managers of the current Access Link facilities, and (b) telephone interviews with ADA division officials from 11 transit agencies nationwide. The primary objective of the discussions with the Access Link facility managers was to learn about their experiences with acquiring properties for leasing. The interviews with transit agencies nationwide were conducted to learn about their approaches to making decisions on facility ownership and location.

Site Visits and Discussions with Access Link Facility Managers
New Jersey Transit facilitated site visits for the research team members to the Access Link facilities, where they conversed with the facility managers about their experiences with bidding, contracting, and leasing properties. The facility managers also provided information about the size of the properties, number of revenue vehicles, number parking spaces, and number of employees at the facilities.

The conversations revealed that facility managers are generally supportive of New Jersey Transit’s ownership of Access Link facilities for a number of reasons. First, finding properties that satisfied the needs in terms of facility size and parking space availability is difficult. Due to the nature of the service, Access Link facilities require large parking lots and relatively small structures for vehicle maintenance and administrative offices. However, properties with such characteristics are difficult to find. Second, due to the short term of contracts, landlords are often reluctant to lease properties to the service providers. One manager cited an example where the landlord decided to lease the desired property to another company since it offered to rent the property for 20 years against a seven-year offer by the service provider. Third, preparing bids for contracts is a long and difficult process. One manager mentioned an instance where almost two years passed between the beginning of the property search and actual service provision from the facility. Searching began with approximately 70 properties, followed by site visits to approximately 20 properties, and then selection of two or three properties for evaluation by New Jersey Transit. Fourth, the rapid growth of service demand has almost always led to severe scarcity of parking spaces for revenue and non-revenue vehicles toward the end of contract periods.

The managers were also cognizant of the high cost of moving facilities from one location to another for each new contract. They were aware of the high costs of structural modifications, equipment installations, and retrofitting at the beginning of contracts and the high cost of demolition at the end of contracts. The managers felt those expenses could be put to other uses if New Jersey Transit owned the facilities. By purchasing land for facilities now, the transit agency could also potentially benefit from an increase in land value. Furthermore, the value of the improvements could be capitalized by New Jersey Transit if it owned the properties instead of leasing. One manager also mentioned that the number of contract bids would increase if New Jersey Transit owned the facilities since smaller service providers that cannot currently bid would be able to compete if they did not have to spend resources searching for properties.

The facility managers fully understand that Access Link facilities should be located in the middle of clients’ pick-ups and drop-offs. However, analytical methods are seldom used to identify areas that are appropriate for facility location. The scarcity of properties with desired characteristics is a reason for service providers avoiding analytical methods. The research team learned from the site visits that the cost of leasing, property size, ease of access and egress,
consistency with zoning, proximity to major highways, and deadhead trips are the main
considerations for companies searching for properties to lease.

Interviews with ADA Division Officials from Transit Agencies
Structured telephone interviews were conducted with ADA division officials from 11 agencies
nationwide to learn about their facility ownership and location decisions. A questionnaire,
approved by Rutgers University’s Institutional Review Board, was used for the interviews that
took place between November 2014 and January 2015. For some agencies, only one official
participated in the interviews, whereas for others, multiple officials participated. The
interviewees were sent the interview consent form and the questionnaire ahead of time so they
had time to prepare for the interviews.

Table 1 shows the agencies from which officials participated in the interviews. To
provide insight about the extent of their services, the number of revenue vehicles for each agency
is presented in the second column of the table. The three subsequent columns show whether the
agencies exclusively lease, exclusively own, or own some and lease other facilities. At the
bottom of the table, the characteristics of New Jersey Transit are presented so they can be
compared with the characteristics of the interviewed agencies.

It is evident from the Table 1 that leasing and owning are almost equally common among
the agencies. Some of the agencies have owned facilities since they began to provide ADA
paratransit service, but others decided to own after leasing facilities for a period of time. The
agencies that decided to own after initially leasing facilities mentioned several factors
influencing their decision: (a) high cost of leasing, (b) inappropriate location of leased facilities,
(c) greater control over facilities through ownership, and (d) higher quality of owned facilities.
Two of the agencies that decided to own facilities after leasing took opportunistic approaches to
owning. One of those agencies acquired a property that was previously leased by a private
service provider. The property was particularly advantageous since it was already designed for a
paratransit facility and it was serving at less than half its capacity. Another agency that decided
to own a facility went through a market search and found an inexpensive piece of land near an
airport runway, where it built a new structure. The owned facility was also significantly closer to
the clients than the formerly leased facility, making it possible for the agency to reduce operating
costs. To reduce costs, the agency shared the facility with another division of the same agency.
Officials from other agencies that own facilities also mentioned sharing of facilities with bus and
rail operations to keep costs lower. Although the facility-owning agencies were unable to provide
models used for making ownership decisions, an official from one of the agencies mentioned that
its model predicted break-even of owning and leasing costs in the 12th year.

The agencies that began owning facilities within the past few years were highly satisfied
with ownership. When asked about satisfaction with owned facilities, an interviewee from one of
those agencies said he would give “ten out of ten” to the facility-owning experience. Arguing for
greater ownership of paratransit facilities by transit agencies, one interviewee asserted that
agencies should realize that “the ADA is not going to go away.” Another interviewee
emphasized that it is imperative for the ADA divisions to work with other divisions within the
agency, such as the capital programming division and the bus operations division, if they want to
own paratransit facilities.
The table below summarizes the agencies interviewed regarding ADA paratransit facility ownership and location:

<table>
<thead>
<tr>
<th>Agency</th>
<th>Number of Revenue Vehicles</th>
<th>Own Only</th>
<th>Lease Only</th>
<th>Own and Lease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Services, Los Angeles, CA</td>
<td>680</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dallas Area Rapid Transit, Dallas, TX</td>
<td>108</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denver Regional Transportation District, Denver, CO</td>
<td>324</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>King County Dept. of Transportation - Metro Transit, Seattle, WA</td>
<td>2,000</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maryland Transit Administration, Baltimore, MD*</td>
<td>483</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Massachusetts Bay Transportation Authority, Boston, MA*</td>
<td>972</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pace Suburban Bus Service, Chicago, IL*</td>
<td>1,100</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional Transportation Commission of Southern Nevada, Las Vegas, NV</td>
<td>305</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Diego Metropolitan Transit System, San Diego, CA</td>
<td>173</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washington Metropolitan Area Transit Authority, Washington, DC</td>
<td>600</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Tri-County Metropolitan Transportation District, Portland, OR</td>
<td>268</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Jersey Transit, New Jersey</td>
<td>450</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

* These agencies also use facilities owned by the service providers.

Source: Telephone interviews by the first author with the ADA division officials from the agencies.

Officials from most agencies that did not own facilities also expressed interest in owning facilities in the near future. Some agencies not currently owning facilities were concerned that the rapid increase in land values would prevent them from owning facilities unless they acquired land soon. However, two agencies were hesitant about owning facilities. The official from one of those agencies mentioned the scarcity of vehicle operators was a more serious problem than leasing facilities through operators. The official from the other agency without an interest in owning facilities expressed satisfaction with the status quo practice of leasing facilities through service providers.

The interviewees from the agencies that own facilities emphasized the importance of functionality of paratransit facilities over other characteristics. An official from one of those agencies insisted that there is no need for transit agencies to spend exorbitant amounts of money to build paratransit facilities resembling the “Taj Mahal.” That official, as well as other interviewees, saw merit in paratransit sharing facilities with bus. One interviewee asserted the
more uses to which a facility can be put, the better it is for the agency since it lowers the risks of ownership. When a property is purchased with only one use in mind, unforeseen circumstances can make the property unusable, but when the property can be used for multiple purposes, at least some of the activities can still be undertaken in the property.

When asked about practices to identify ideal facility locations, some interviewees mentioned taking ad hoc approaches due to the scarcity of suitable properties in their service areas. However, several interviewees mentioned receiving assistance from other divisions within the agency for location analysis. The interviews indicated that the ADA divisions of agencies generally do not have the skill set or resources to conduct GIS or other types of analysis for facility location. The interviews revealed that the following are the most important location-oriented considerations when properties are searched by agencies for paratransit facilities: (a) being in the middle of clients, (b) low deadhead trips and mileage, (c) close proximity to freeways, (d) multiple routes to freeways, (e) ease of entering and exiting the facility by paratransit vehicles, (f) ease of access by car for employees, (g) parking space availability for employees, and (h) ease of access by public transit for employees.

**DATA ANALYSIS**

Two broad sets of analyses were undertaken as a part of this research: (a) a comparison of costs of owning and leasing for five properties, and (b) the identification of areas that are appropriate for Access Link facility location in the six operating regions. The two following sections describe the analytical approaches and the key results.

**Analysis Comparing Costs of Owning and Leasing Facilities**

The five properties considered for cost comparison included four facilities leased by Access Link service providers and a property that was being assessed by a provider for a potential facility. The five properties were chosen since their annual leasing costs were already known and their current purchase price could be obtained through a licensed commercial/industrial realtor. The lease amounts of the properties were obtained from New Jersey Transit, whereas the realtor estimated the purchase price of the properties based on the value of recently sold properties in the vicinity and the property characteristics, including lot size and structure size.

The comparison of leasing and owning costs was made by considering a 25-year horizon (2016 to 2040). At the outset, forecasts were made for revenue vehicles (i.e., Access Link vehicles) and non-revenue vehicles (i.e., employee and visitor vehicles) up to the year 2040 so that future parking space requirements could be estimated for the respective regions. Three sets of forecasts were made, the first based on annual fleet growth since the late 1990s, the second based on monthly ridership growth since the mid-1990s, and the third based on monthly ridership growth during the past seven years of service. The forecast based on past seven years’ data was made since growth during that period was higher than the previous years.

Once the forecasts of revenue and non-revenue vehicles were made for each property, the size of parking lots was estimated by using parking standards. Subsequently, the required size of maintenance and office structures within the properties was estimated by using the ratio of structure size and parking lot size in the Region 5 facility. The Region 5 facility was used as the standard since its parking and structure dimensions were the simplest of all facilities.

The sale price or total ownership cost of the properties for the horizon year was estimated by aggregating land value, parking lot construction cost, and structure construction cost. The cost of land was estimated based on recently sold industrial properties in the respective regions by
using the Costar® database. The structure construction costs were estimated by using the 2015 National Building Cost Manual (18) with assumptions regarding structure height, structure shape, and the quality of building materials. For parking lot construction cost estimation, rates from a real-life parking lot construction project involving some of the research team members were used. The parking construction estimates were compared with the standards in the National Building Cost Manual to ensure the estimates were reasonably similar. The costs of maintenance, repair, and utilities were added in the cost models assuming that the unit costs would remain the same in the future.

To estimate leasing costs of facilities up to the horizon year, the current leasing costs were inflated to account for the larger size of facilities in the future. Subsequently, the costs per year for leasing and owning over a 25-year period were estimated and converted to 2015 dollars assuming that the value of dollar will decrease by 3% each year. Since leasing costs have historically increased for all Access Link facilities between consecutive contracts, it was assumed that such increases would continue in the future at seven-year intervals (i.e., it was assumed the current contract length of seven years would continue in the future).

Finally, the cumulative costs of leasing the five properties up to the year 2040 and the total estimated cost of owning the properties were compared. The comparison revealed the break-even years for the five properties would be 9, 11, 11, 16, and 19 years. The comparison of leasing and owning costs for the facility that would break even in the 16th year has been shown in Figure 3. As shown in the figure, the cost of owning facilities would be higher up to the 16th year but lower beyond that year. The analyses further showed that aggregate savings for 25 years...
from owning the facilities will vary between $6.0 million (for the facility that would break even in the 19th year) and $13.7 million (for the facility that would break even in the 9th year), with the potential for additional savings past the 25th year if the facilities are maintained in good condition.

Although the comparison of owning and leasing costs for the five properties provided valuable insights, the costs of ownership could vary if the assumptions were revised. Since land value is an important component of total cost of the properties, the cost of ownership would significantly increase if a property were to be located at a site with higher land value. The costs of structures and parking lots could also vary depending on assumptions about height and shape of structures as well as the configuration of parking lots and access/egress from the parking lots. If properties with large parking lots in reasonably good condition could be acquired, the cost of ownership could be significantly lower.

Identifying Appropriate Locations
The second major objective of this research was to identify areas within each of the six Access Link operating regions that are appropriate for facility location. The identification of such areas is important for New Jersey Transit not only if it decides to own facilities, but also if it continues to lease facilities through service providers.

To identify the appropriate areas, three variables were taken into account: proximity to pick-up and drop-off locations, travel time from freeway ramps, and land use. The first two variables were mentioned as important location considerations by the Access Link facility managers as well by the interviewed transit agency officials. The variable on land use was taken into account since municipalities generally allow paratransit facilities only in industrial areas. Deadhead trips were not analyzed because the agency’s scheduling and dispatching software adjusts vehicle runs to minimize deadhead duration.

In the initial step of the analysis, the pick-ups and drop-offs of approximately 1.7 million Access Link trips, made in 20 consecutive months between October 2012 and April 2014, were mapped. In the second step, the network travel time to all the pick-up and drop-off locations from the centroids of all 6,058 census block groups within the service area was estimated by using the ArcGIS Network Analyst. It was realized at this stage that analyses with pick-ups would generate virtually identical results as analyses with drop-offs since Access Link pick-ups generally occur at the same locations as drop-offs (e.g., homes or typical destinations of clients). In the third step, therefore, accessibility of the study area block groups was estimated by taking into account only pick-up locations. Accessibility was measured using several models, including the simplest:

\[ A_i = \sum_{j} \frac{P_j}{T_{ij}} \]

where \( A_i \) refers to accessibility of block group \( i \), \( P_j \) refers to number of pick-ups at location \( j \), \( T_{ij} \) refers to travel time between the centroid of block group \( i \) and pick-up location \( j \). Other accessibility models that overemphasize and underemphasize pick-ups and travel time were also used for experimentation. Since a comparison of accessibility maps from different models revealed little difference in block group accessibility in a relative sense, further analyses were
carried out by the model shown above. In consultation with New Jersey Transit’s ADA Services division, it was determined at this stage that block groups with the highest 20% accessibility would be appropriate for paratransit facility location.

In the fourth step, network travel times between centroids of the top 20% block groups and freeway ramps within the study area were estimated by the Network Analyst. Based on current locations of Access Link facilities and learning from the interviews, it was determined that a block group within five minutes of freeway ramps would be appropriate for facility location.

**FIGURE 4** Land uses in block groups with high access to pick-ups and high proximity to freeways (Region 2 Example).

Finally, the 2012 statewide land use map from the New Jersey Department of Environmental Protection was overlaid on the accessibility maps for the six operating regions to identify areas that (a) ranked within the top 20% in terms of pick-up accessibility, (b) were within five minutes of freeway ramps, and (c) had industrial land uses. The resulting map for one
of the Access Link regions (Region 2) is presented for illustration in Figure 4. Although the
entire area in the map and areas beyond are within Region 2, only a small area satisfied the top
20% criterion and an even smaller area satisfied the five-minute criterion. Perhaps the most
concerning finding is that there are not many industrial sites within the area that satisfied the first
two criteria, indicating that sites that are both desirable and potentially permmissible for paratransit
facilities are not abundant. The analysis for the other five operating regions also showed similar
results. From these results, one can comprehend why service providers perpetually have
difficulties in finding desirable properties for leasing. The scarcity of industrial properties in
desirable areas also shows the importance of the transit agency being opportunistic if it wants to
own paratransit facilities.

CONCLUSIONS AND RECOMMENDATIONS
This paper summarized the analyses and findings from a broader study that compared the
advantages of owning and leasing ADA paratransit facilities by transit agencies and also helped
to identify areas appropriate for locating paratransit facilities by using New Jersey Transit as a
case study. The practice scan and literature review showed that ownership and location issues of
paratransit facilities have been rarely studied. The interviews with transit agency officials
revealed that agencies have often continued to own or lease paratransit facilities based on
decisions made at the time of inception of their ADA paratransit services. However, a few
agencies that leased facilities in the beginning decided to own facilities in subsequent years due
to concerns about leasing. The agencies that began owning appear to be highly satisfied with the
change of practice. Although not all agencies consider owning paratransit facilities as a top
priority, most agencies currently leasing facilities see merit in owning at least some facilities.

Like many agencies nationwide, New Jersey Transit has leased its Access Link facilities
since the introduction of ADA service. However, the ADA division of the agency is concerned
about the high cost of leasing, the necessity to move facilities from location to location at the end
of each contract, and the time taken by contract negotiations each time a facility has to move
from one location to another. The comparison of leasing and owning costs in this study show that
New Jersey Transit may benefit by owning facilities in the long run, especially after 15 years or
so, if the quality of the facilities remains the same and leasing costs increase at the rate of
ridership growth. Based on the study results, the following recommendations were made to New
Jersey Transit:

(a) Consider owning one Access Link facility and examine the effects in real life before
acquiring additional properties.
(b) Consider owning a facility in a region where properties are abundant and land value is
not extremely high, ensuring that the facility is sufficiently large to accommodate
growth for 25 years or more.
(c) Consider owning a facility near clients and multiple freeways, but remain open to
alternative locations if other property characteristics are more favorable.
(d) Take a proactive approach and consistently look for appropriate opportunities to own
a facility.
(e) Pay attention to potential growth of ridership when deciding on property size and use
projections only as a guide.
(f) Coordinate with other divisions of the agency (e.g., real estate) for ownership
considerations of properties.
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Consider properties that can be put to multiple transit uses.

Once a desired type of property is identified, conduct detailed real estate evaluation by licensed professionals by using the findings of this study as a guide.

The justifications for each of the above recommendations are to be found in the broader study from which this paper was extracted (19). New Jersey Transit was provided the GIS shapefiles identifying areas with high accessibility to clients, high proximity to freeways, and locations of industrial land in each Access Link region so that it can make informed decisions about facility location in the future. The agency was also provided information on average land value of industrial land and historical transactions of industrial properties in the six operational regions so that it is aware where industrial land is more abundant and inexpensive.

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