



Defining the cities of tomorrow



Americans With Disabilities Act (ADA) Paratransit Innovation Study

ACTION PLAN

IBI Group
with DemandTrans Solutions Inc. and Fish Transportation Group
February 2021

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Executive Summary

The Regional Transportation Authority (RTA) is developing an innovation strategy for Pace ADA Paratransit services. The strategy identifies potential pilot programs to be integrated into Pace's ADA Paratransit operations to improve the future sustainability of the service.

Innovative strategies are needed given the fast-growing population of seniors and people with disabilities that may place a significant financial and operational burden on the future delivery of paratransit services. Key trends that may drive ADA paratransit demand in the Greater Chicago area include a shift in population from the urban areas of Cook County to Suburban Cook County region and the collar counties; ageing population; and an increase in the population with disabilities and chronic illness. Current demand alone is resulting in unsustainable operational and fiscal burdens, particularly in terms of increasing cost to deliver ADA trips.

The study process included several components summarized in a number of Technical Memoranda addressing: Existing Conditions; Challenges to Sustainability; Identification of Potential Innovations; Review of Literature and State of Practice; Modeling and Analysis of Potential Innovations; and an Evaluation of Potential Innovations. Informed by the data collection, modeling and analysis, and in collaboration with the Project Management team, an Action Plan for Recommended Innovations (as presented herein in Chapter 5) was developed.

Potential Innovations – *Imagine Possibilities*: Working with the Project Steering Committee, a menu of innovations that could potentially be applicable to Pace ADA Paratransit services was presented. Building on the outcomes of the *Modeling and Analysis of Potential Innovations* and as informed by the *Challenges, Potential Innovations*, and *State of Practice*, the most promising outcomes (recommended pilot projects) for operational and fiscal enhancements were identified. Further, potential pilot projects were considered relative to the following Guiding Principles and Goals.

Guiding Principles

- Preserve Integrity of Pace Paratransit
- Maximize Use of Investments
- Compliance with ADA / Title VI
- Fiscally Responsible and Accountable

Goals (RTA Strategic Plan)

- Deliver on Investment (including cost/efficiency considerations)
- Build on the Strengths of Network (service delivery)
- Stay Competitive (innovate, try new things, employ new technologies)

Action Plan – A Way Forward - Pilot Projects:

Study outcomes led to recommendations for advancing the following three pilot projects:

1. Same Day – Consumer Choice Program;
2. Enhanced Use of Non-Dedicated Vehicles; and
3. Feeder Service.

Chapter 5 provides a more detailed overview and provides reference to staff resource requirements, major activities, milestones and a recommended deployment schedule for each of the recommended pilot projects.

The following provides a summary description of each recommended pilot and a summary of the results of analysis undertaken for each.

PILOT PROJECT	SUMMARY OF ANALYSIS
<p>1. <u>Same Day - Consumer Choice Program</u></p> <p>On-demand (same day) service to Pace paratransit customers. Pilot with contracts with two or more non-dedicated service providers (NDSPs). Customers can book trips directly with the service provider and right from their smartphone, instantly—or call in for reservation service.</p> <p>In essence, to extend the consumer choice mechanism beyond the City of Chicago’s TAP program into suburban Cook County.</p> <p><u>Deployment:</u> Q2/Q3 2022</p>	<p>It is clear that a very substantial shift of trips to TAP¹ is necessary for the ADA program to experience major cost savings. If 30% of the current ADA trips in the City shifted to TAP, and there was no increase in overall usage, annual savings of approximately \$18 million would result. But if those who shifted increased their usage by 25%, these savings would be reduced to less than \$13.5 million annually, or approximately 9% of the total cost of the ADA service operated by Pace.</p> <p>Cost effectiveness and enhanced customer experience borne out by analysis and peer experience.</p>

¹ TAP: Pace's Taxi Access Program (TAP) allows ADA Paratransit-eligible riders to hail a Chicago taxi for their transportation needs, instead of riding ADA Paratransit. To use TAP, customers must be certified for ADA Paratransit by the RTA and must have an active TAP card to purchase TAP rides. A TAP card enables registrants to pay \$3 per ride for a one-way taxi ride worth up to \$30 per ride. Registrants can take up to 8 one-way taxi rides per day. Unlike ADA paratransit, there's no need to reserve a trip a day in advance. Registrants can call or hail a taxi at their convenience.

PILOT PROJECT	SUMMARY OF ANALYSIS										
<p>2. <u>Enhanced Use of Non-Dedicated Vehicles</u></p> <p>Expand the service offerings available to Pace in their scheduling of advance-booked paratransit service. Build on Pace’s current success with use of non-dedicated service providers (NDSPs) in select areas and expand the use to include TNCs. Analysis identifies the increased use of NDSPs and a reduction in service by dedicated vehicle operations as the most financially impactful option.</p> <p><u>Deployment:</u> Q3/Q4 2022</p>	<p>The consequence of using the dedicated vehicle service model is that cost per passenger for ADA service is very expensive, in many cases significantly more than would be the case if every passenger was transported by regular taxi service. Of course, most taxi fleets could handle only a small portion of the ADA trips involving wheelchairs. However, this does not invalidate the fact that using the dedicated vehicle service model for all ADA trips has been a major factor in the high costs of ADA service. Moving away from exclusive or near-exclusive reliance on dedicated vehicle operations to incorporate more taxis and for-hire services offers substantial potential for reducing costs per trip and overall ADA service expenses.</p> <p>The analysis of annual cost reduction estimates for multiple non-dedicated vehicle scenarios produced a set of trips to allocate to non-dedicated service providers (NDSPs) which are associated with specific small geographic areas that can be implemented in Trip Broker² as geo-fenced areas.</p> <table border="1" data-bbox="721 1073 1325 1430"> <thead> <tr> <th colspan="2" data-bbox="721 1073 1325 1167">Annualized Cost Reduction</th> </tr> <tr> <th data-bbox="721 1167 963 1251">Scenario</th> <th data-bbox="963 1167 1325 1251">All City Providers</th> </tr> </thead> <tbody> <tr> <td data-bbox="721 1251 963 1310">15% Diversion</td> <td data-bbox="963 1251 1325 1310">\$10.6M</td> </tr> <tr> <td data-bbox="721 1310 963 1369">26% Diversion</td> <td data-bbox="963 1310 1325 1369">\$12.9M</td> </tr> <tr> <td data-bbox="721 1369 963 1430">37% Diversion</td> <td data-bbox="963 1369 1325 1430">\$17.3M</td> </tr> </tbody> </table>	Annualized Cost Reduction		Scenario	All City Providers	15% Diversion	\$10.6M	26% Diversion	\$12.9M	37% Diversion	\$17.3M
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² Trip Broker – one module in the Trapeze suite of products used by Pace in the scheduling and route optimization of ADA paratransit trips.

PILOT PROJECT	SUMMARY OF ANALYSIS
<p>3. <u>Feeder Service</u></p> <p>a. Registrant makes <u>advance-booked request through Pace call-center</u>. Use of dedicated and NDSPs as a feeder to accessible bus and rail services, addressing ‘first and last mile’ challenges.</p> <p>b. Registrant makes <u>same day request through Consumer Choice program</u> for trip with an origin or destination at an accessible bus stop or rail station.</p> <p><u>Deployment: Q4 2022/Q1 2023</u></p>	<p>Based on analysis conducted, it is recommended that the Feeder Service pilot project be initiated after the implementation of the Same Day Consumer Choice project. The prior analysis indicates that establishing a feeder service component specifically for the current ADA program (next day service based on dedicated vehicle operations) is not likely to yield outcomes significantly more cost-effective than the current program.</p> <p>By basing Pace’s Feeder Service pilot project on the Same Day Consumer Choice service (for the feeder component), trips can be delivered for a much lower cost than would be the case if the regular ADA service were used. A 3-mile feeder trip to a CTA or Metra station delivered by a taxi or TNC via the Consumer Choice approach is unlikely to cost more than about \$10-12 in subsidy, even with a free fare to the traveler, whereas the subsidy for a regular ADA trip is likely to be 2 to 3 times greater.</p> <p>Moreover, by utilizing the Same Day Consumer Choice pilot program for this pilot project as well, no new service modality needs to be created for Feeder Service. The Feeder Service easily and automatically scales if it proves to be popular—these are just additional trips in the consumer choice program and such trips can be designated as not counting against any trip limits for an ADA customer in that program.</p>

1.0 Context

The Regional Transportation Authority (RTA) is developing an innovation strategy for its ADA Paratransit services to identify potential pilot programs to be integrated into Pace's ADA Paratransit operations to improve the future sustainability of the service

Innovative strategies are needed given the fast-growing population of seniors and people with disabilities that may place a significant financial and operational burden on the future delivery of paratransit services. Key trends that may drive ADA paratransit demand in the Greater Chicago area include a shift in population in Cook County to Suburban Cook County region and the collar counties; ageing population; and an increase in the population with disabilities and chronic illness. Current demand alone is resulting in unsustainable operational and fiscal burdens, particularly in terms of increasing cost to deliver ADA trips.

As documented under separate cover in the Task 3 Technical Memorandum, internal and external challenges have been presented that may threaten the sustainability of the ADA paratransit program. Initiating Task 3, the Consulting Team met with the project Steering³ and Advisory⁴ Committees to first fully understand and document Pace operations and then preliminarily identify key challenges: issues, threats, constraints, demographic changes, technology changes, and other pressures on ADA paratransit services. Acknowledging Pace services are operationally efficient, it was discussed that this project should focus on opportunities for cost-containment, identifying sustainability challenges facing the Pace ADA Paratransit program as operated today and exploring how to optimize the use of ADA Paratransit with appropriate less-costly options including fixed route bus and rail service. Additionally, supplemental service options that might include Personal Mobility on Demand (PMoD) and /or micro transit services should also be considered. Overall, emphasis should be placed on improving door-to-door travel experience of customers by improving the process of discovery, booking, payment, service delivery and customer information for their entire trip chain.

Existing Conditions

The Chicago region's ADA paratransit program is the second largest such program in the U.S., exceeded in daily trip volume only by that in New York City. Overall, ADA paratransit program ridership has steadily grown over the past two decades except for slight declines over the past two years, and now serves approximately 12,000 trips on an average weekday. The program has been administered and managed by Pace since 2006. Prior to 2006 the CTA and Pace each managed the ADA paratransit services within its service jurisdiction. By all indications, the region's ADA paratransit program functions more effectively and cost-efficiently under the current consolidated system than would have been the case if the prior approach had been maintained.

³ Project Steering Committee: RTA staff and Pace operations and planning staff.

⁴ Project Advisory Committee: RTA and Pace leadership, Chairpersons of two Pace Advisory Committees, and Chairperson of the RTA Transit Access Citizens Advisory Board (RTACAB).

The use of the ADA paratransit services is strongly oriented towards trips within the City of Chicago (“City”) and suburban Cook County, even as the program provides service to ADA eligible persons in the entire six-county Chicago region. Overall, 72% of the trips are within the City with the remainder in suburban Cook County, DuPage County, Kane County, Lake County, Will County, and McHenry County. Only about 6% of the ADA trips occur outside of Cook County (including the City of Chicago). By comparison, nearly 38% of the region’s population is outside of Cook County. This strong orientation of trips within the City is reflective of the region’s population distribution and location of the region’s public transit network.

Program Structure: The region’s ADA paratransit program consists of 3 components: 1) dedicated vehicle services in the City of Chicago; 2) Taxi Access Program (TAP), a user subsidy program in the City of Chicago; and, 3) dedicated vehicle and non-dedicated vehicle services in suburban Cook County and in the so-called “collar counties”—DuPage, Kane, Lake, Will, and McHenry Counties. In addition, Pace has recently begun to use non-dedicated vehicles on a limited basis in the City of Chicago service (which differs from the TAP program).

The region’s ADA paratransit program has long had a service zone structure in the City and Cook County. Three service zones were implemented in 2008 in the City of Chicago ADA service area—north, west/central, and south—each assigned to a specific service contractor and an overlay of long-distance trips that another service contractor handled. Suburban Cook County had 3 zones—north, west, and south. The other suburban counties essentially had self-contained services that did not cross the county boundaries—trips needing to go to another county had to transfer from one ADA paratransit service to another.

City of Chicago

Following a 2010-2011 study, changes were made to the zone system in the City of Chicago which had the effect of relaxing, but not completely abandoning the zone concept. Conversely, in suburban Cook County, the zones have been retained in essentially the same form as they existed in 2010. The current system in the City has been in place now for three years and appears to be relatively stable in terms of service outcomes. The percentage of wheelchair trips, at 12%, is low for ADA paratransit programs. The average trip length is 7 miles—and the median trip length is slightly less than 6 miles—with an average travel time of 37 minutes. These values are also at the lower end of the spectrum for large city ADA paratransit programs.

The taxi subsidy program, TAP, required taxi participation by Chicago Ordinance and sponsored by the City of Chicago provides a subsidy to ADA paratransit registrants who wish to use taxis for trips that originate within the City limits. For a \$3 fee per trip, TAP users can take a taxi trip for up to \$30 in taxi fare (approximately 9 to 10 miles). TAP users can take as many as 60 trips per week, and up to 8 trips per day. These are on-demand trips, including same day taxi trips.

Suburban Cook County and Other Suburban Counties

The ADA paratransit services in suburban Cook County are substantial operations in their own right. Both the South Cook and the North Cook services each exceed 1,000 trips per day, and West Cook County generates about 450 trips per day. Outside of Cook County, ADA paratransit program ridership does not even reach 300 trips per day in any of the other counties in the region. These three services are dedicated vehicle operations using a single carrier per service area with service areas operating relatively independently of each other. Also, in 2019 North Cook and South Cook had implemented contracted taxi services in addition to the paratransit service provider.

It is notable that a significantly higher portion of trips involve wheelchairs—17% to 19%—than in the City (12%). Average trip lengths are comparable to the City (whose average trip length is 7.1 miles) in South Cook and North Cook, but much shorter in geographically compact West Cook, which is expected due to the smaller size of its service area. One-third of all the trips in the West Cook zone are less than 3 miles in length.

Recent Developments

Pace has made several incremental adjustments to the ADA paratransit program:

- 2006: Implemented central reservation phone number, had no trip denials (in compliance with ADA regulations), and added a carrier for subscription trips;
- 2008: Implemented computerized reservations and scheduling system; and
- 2014 -2018: Assigned dedicated carrier for trips over 15 miles to improve on service efficiency and centralized trip distribution eliminating zones. In addition, added contracted taxi services to augment dedicated capacity.

In 2016, Pace implemented a new trip distribution system in which the three, former zone-based service providers (Pace uses the nomenclature “carrier” to refer to a service contractor) continue to take next day trip reservations and confirm pickups at the time of the reservation. The Trapeze system then automatically determines which provider to assign the trip to and when the trip can best fit into the schedule of a specific vehicle run.

The recent use of non-dedicated vehicles to supplement the traditional dedicated vehicle service in the City has been available on a limited basis. This is different from the TAP program, which operates in parallel to the ADA paratransit service. The use of non-dedicated vehicles—in taxi-like fashion—is as an operational supplement to the dedicated vehicle ADA paratransit service. The non-dedicated vehicle component of the City’s ADA paratransit program is still in the pilot project phase, but it appears to be operating satisfactorily and is likely to become a permanent feature of the program.

These developments illustrate the willingness of Pace to try innovative service concepts and to use processes—and eventually technology—to segment the daily set of trips and to assign the segments to the most cost-effective service delivery option. In addition, the willingness of a long-standing carrier to provide services in a different modality with a different compensation system, is an encouraging sign of the potential flexibility of service suppliers to participate in innovative service concepts.

Challenges to Sustainability – Key Takeaways

Key takeaways from Technical Memorandum 3: *Challenges to Sustainability* are highlighted below. The identification of challenges and determination of key takeaways was based on a comprehensive assessment process. This included interviews with Pace staff, review of background documents, review of operating and financial data, assembling of regional data and trends, along with input from the Steering and Advisory Committees. Key takeaways are presented below and provide the context for subsequent analysis and documentation including informing on the innovations addressed in Task 4 and the case studies analyzed in Task 5.

- *Changing Demographics* - The majority of current ADA paratransit trips are in the City of Chicago region making it a significant cost center for the program. While suburban Cook and collar county population is significantly higher, the number of trips is lower and average trip lengths are higher. However, population is shifting from Chicago/suburban Cook County to the collar counties; overall population is aging; and, as the population ages, population with chronic diseases and disabilities will also grow. This creates new challenges which may impact future demand and service delivery for the ADA program. A number of outside influences that counter these demographic shifts may include advances in medical technology and its impact on wellness; and the dynamics of aging differently including many older adults to maintain physical and cognitive abilities later in life, have changing expectations for mobility and be more tech savvy.
- *Eligibility & Certification* - There has been an increase in the overall number of program eligible ADA paratransit customers and registrants since 2017. To date, this has not translated to an increased number of trips (travel demand) but may, in the future.
- *Ridership Trends* - Ridership has gone down, while trips per hour have decreased and trip lengths have increased. Only about 6% of the ADA trips occur outside of Cook County (including the City of Chicago). By comparison, nearly 38% of the region's population is outside of Cook County. As previously noted, population has been shifting from Cook County to the collar counties over the last several decades. RTA's Regional Strategic Plan for 2018 – 2023, *Invest in Transit*, addressed this challenge, noting that the general population is shifting from areas where transit service levels are higher to areas where levels of fixed route transit, and in relation, Pace ADA paratransit services are lower. Slower population growth and the shifting of the population affect the demand for ADA paratransit service. This imbalance between population and demand presents challenges in preparing for the future and the allocation of resources based on existing demand or prepare for potential increases in demand in the suburbs.
- *Financials* – The cost per ADA paratransit trip has increased, while TAP rides remain the most cost-effective mode. The sustainability questions addressing

opportunities for cost containment and efficiency includes: 1) how to better leverage the accessible fixed route system for paratransit trips that make sense in order to maximize utilization of the most productive/cost effective services on the system; and 2) what changes are needed to use existing fixed route mainline services more productively, such as placing longer ADA paratransit trips.

- *Funding Stability* - Operating funding is considered stable for the ADA paratransit program as this program receives top funding priority from the region's sales tax. However, if operating costs increase, this becomes limiting to other service expansion. Should driver costs continue to rise as wages increase, this will increase ADA operating costs. While capital funds may be less stable, the Illinois capital bill, Rebuild Illinois, included money for Pace technology upgrades. These upgrades could have a positive impact on the customer experience and operational productivity. It is anticipated that Pace will utilize a portion of Rebuild Illinois funding for paratransit vehicles.
- *Service Delivery* – Service delivery challenges are reflective of a combination of many factors: changing demographics resulting in population shifts and an aging population; changing mobility influenced by changes in technology, applications, and information; ridership trends related to the imbalance between population and demand; and, cost-containment measures.
- *Changing Mobility/Emerging Technology* – The prospect of building on the success of the TAP program and piloting the use non-dedicated vehicles on a limited basis may present an opportunity for the partnering with Transportation Network Companies (TNCs). Challenges to this relate to potential risks such as TNCs not being centrally-regulated, regulatory requirements for vehicle standards and driver training, data management/reporting, and availability of accessible vehicles.
- *Flexibility in Current Technology Platform*: The ability of Trapeze to accommodate additional technology is a concern. Pace is committed to the Trapeze platform, and will be upgrading to version 18, which requires significant customizations for Pace. Specific technology deployment items including web portals, web/app-based planning and bookings, mobile payments, etc. are not capable through Trapeze, although this might be accomplished through third party partners.

In summary, understanding sustainability challenges provides insight regarding how different conditions could challenge the program and impact future alternatives. Of the highlighted key findings, or takeaways, a significant conclusion is that with 94% of the ADA paratransit trips in the region in the City of Chicago (72%) and suburban Cook County (22%), the greatest opportunities for technology and innovation to make a significant difference in cost-effectiveness and service responsiveness will be for the ADA paratransit services in those areas.

As previously noted, the *Challenges to Sustainability* presented in the Task 3 Technical Memorandum provides a framework for considering *Potential Innovations* as discussed in Section 3.

State of the Industry: Transit agencies in the United States have been partnering with private sector such as TNCs, private microtransit companies, and real-time routing and dispatching software providers for many years now, particularly since the MoD Sandbox initiative was launched by USDOT. However, transit agencies are still assessing how best to position themselves in the shifting paradigm of mobility. Throughout this time agencies have experimented with replacing existing services, complementing current services, and adding new services. Given most of the operating cost in transit industry is attributed to direct driver employment and vehicle ownership, agencies have experimented with a variety of models, where they 1) operate a service on their own; 2) use a contractor to run their services; or 3) partner with TNC or Taxis and subsidize trip cost. There is no clear conclusion on the best model, and it varies largely on the type of service being provided and the ridership demography. Several agencies (e.g., MBTA, SFMTA) have adopted web-based booking to offer the flexibility of same day booking and electronic payments in partnership with non-dedicated service providers (NDSP) such as taxis or TNCs. Further, some agencies such as SFMTA have used app-based booking (or MOD) to provide alternatives to ADA paratransit for specific trip purposes (e.g., shopping, events) to reduce the burden on conventional paratransit service. Some agencies have started to experiment integration among all services (Family of Services/FoS) to provide a more seamless experience across all services offered. In particular, this includes providing a centralized payment account as implemented by TriMet through this Hop FastPass account-based system which has also implemented the concept of fare capping⁵ for its paratransit customers.

⁵ Fare capping allows agencies to implement a pricing strategy such that when customers have paid a certain amount for a time-period that is equivalent to the value of a period pass (e.g., daily, monthly, and annual), they are not charged any extra amount for that time period.

2.0 Potential Innovations – *Imagine Possibilities*

Working with the Project Steering Committee, a menu of innovations that could potentially be applicable to Pace ADA Paratransit services was presented. These “potential innovations” were addressed related to specific outcomes and included committee consensus as to which potential innovations were to be advanced for further analysis (vs. those potential innovations determined not to be advanced, at this time).

Table 2.1 presents a summary of Potential Innovations that are to be and those that are not to be advanced for further analysis.

Table 2.1: Potential Innovations – To Advance & Not to Advance

Potential Innovation
To Advance – Further Analysis
Mobility on Demand (MoD)/Emerging Technology
Conditional Eligibility
Integration with Fixed Route Transit/ADA as a Feeder
Same Day Service/TAP/TNCs
Pricing Policy
Subscription Trips
Integrated Trip Planning
Communications
Contract Structure
Not Advance – at this time
Trip Brokering/E-Commerce
Electrification of Fleets
Autonomous Vehicles
Wearable Technology/Advanced Wayfinding
Segmentation of Pace Service Area into Zones
Delivery of Dialysis Trips

3.0 Analysis and Evaluation

3.1 Analysis

The analysis and modeling task is presented in detail in the *Task 6: Analysis and Modeling* Technical Memorandum,

Based on previous research conducted by the project team, and discussion with the key project stakeholders including the Advisory Committee, the decision was made to undertake in-depth analysis of the following technology-related innovations.

1. Mobility on Demand (MOD)/Emerging Technology for Customer Interaction
2. Subscription Trips
3. Integrated Trip Planning
4. Conditional Eligibility
5. Integration with Fixed Route Transit/ADA Service as a Feeder
6. Same Day Service via Taxis (TAP) and TNCs
7. Enhanced Use of Non-Dedicated Vehicles via Technology Mechanisms

Other identified potential innovations, notably (a) Pricing Policy and (b) Communications, remain relevant, but are less amenable to data-driven analysis at the current time and were not included in the Task 6 Tech Memo.

Customer Adoption of Mobility on Demand Technologies for Service and Information Access: Pace intends to upgrade the technology used for the region's ADA program by investing in several applications connected to the Trapeze PASS system that will enable its customers to more easily connect to the service. Of greatest relevance are three key elements of mobility on demand (MOD) technologies: (1) self-service customer booking of trips; (2) notification system that automatically informs customers of imminent vehicle arrivals via the communication channel of choice of the customer—email, text message, or IVR; (3) self-service information about the current estimated time of arrival (ETA) of the vehicle assigned to the customer's trip.

Additional Emphasis on Subscription Trips: An analysis of the 800,000 trips that occurred in the City of Chicago indicates a limited opportunity to increase service productivity by classifying recurrent one or two day per week trips as subscription trips. Slightly more than 60,000 trips might be candidates for new subscriptions, as this is the number of trips that occur once or twice per week (typically a round trip with 1 trip in each direction) from the same address at the same hour each week. This is 7.5% of the total trips in Chicago.

Shifting those 60,000 trips to subscription status would increase productivity marginally, by no more than 3% overall based on the difference between the productivity for runs with many subscription trips and those with few or none such trips. However, since these recurring trips would only impact a run one or two days per week, it is not clear

that even this small amount of productivity increase could be fully achieved. If these gains could be actualized, the impact on operating costs would be less than \$2 million annually.

Integrated Trip Planning: This innovation offers the possibility that a significant number of ADA paratransit users might decide to change their travel habits—and trip patterns—if they had a means by which they could easily plan their trips on the public transportation system. In theory, if the ADA eligible population had access to sophisticated trip planning technology via a web site or smartphone application, they might decide to use conventional public transportation for more of their trips or they might use the ADA paratransit services differently.

Conditional Eligibility Trips as Pilot Project for Feeder Service Approach: The original concept for a pilot project for feeder service was to focus on the conditionally eligible ADA registrants. This was for 2 reasons. First, because this population represents only about one-eighth of the total set of ADA registrants it would be of an appropriate size for a pilot project. Second, as these individuals are only conditionally eligible, it would be more feasible to request that they use the feeder service rather than the current door to door ADA service—their conditional status indicates that under appropriate circumstances they can use regular public transportation. The feeder service would likely eliminate the impediments to using public transportation for some, and perhaps many, of the conditionally eligible. Door to door service would still be provided for the pickup and delivery portions of the trip, even as the majority of the trip would occur on rail transit or bus service.

Trip making patterns of those individuals who are conditionally eligible do not exhibit major differences with those who are unconditionally eligible (“regular” ADA riders). Approximately 14.5% of the City of Chicago ADA program registrants are conditionally eligible, and they represent 12.8% of all trips in that program. However, they represent 14.1% of the non-subscription trips in the program, essentially the same as their portion of the overall ADA registrants. (Trips by the conditionally eligible represent a small portion of the subscription trips, less than 5%.)

Feeder Service for All ADA Customers as Substitute for Current ADA Service Approach: Given the unsatisfactory results of the feeder service option restricted to the conditionally eligible customers, an analysis had also been performed on the possibility of having all ADA customers being part of the feeder service approach. In this scenario, all longer distance trips would be handled by the feeder service approach, with the customer being taken to the nearest CTA rail station and then pickup up at the CTA station nearest to the ultimate destination of their trip. For shorter trips—3 miles can be used as a tentative upper bound—the current ADA paratransit service modality would remain. However, to the extent possible, the vehicles used for the feeder service could also be used for the “local” trips (those going directly from origin to destination on the vehicle). This dual purposing of the vehicles would most likely be limited due to the need to maintain high service quality for the feeder service portion of the operation.

Same Day Service/TAP/TNCs/Consumer Choice Options: It is clear that a very substantial shift of trips to TAP is necessary for the ADA program to experience major cost savings. If 30% of the current ADA trips in the City shifted to TAP, and there was no increase in overall usage, annual savings of approximately \$18 million would result. But if those who shifted increased their usage by 25%, these savings would be reduced to less than \$13.5 million annually, or approximately 9% of the total cost of the ADA service operated by Pace.

Enhanced Use of Non-Dedicated Vehicles: ADA paratransit services “borrowed” a service model from “Dial-A-Ride” services that had become widespread in suburban areas and small cities throughout the country by the late 1980’s. Those services, which at that time were largely for the general public, almost always used a small fleet of dedicated vehicles. The dedicated vehicle service model has proven to be a very poor fit for DRT services for the disabled, i.e., ADA paratransit. Because the demand density of DRT services for ADA customers are typically much lower than the demand density for general public DRT services, and the average trip lengths of ADA trips are usually 3 times or more longer than general public DRT trips, ADA services using dedicated vehicles typically have service productivity that is less than even taxi service. The latter usually carried 2 to 2.5 trips per vehicle hour, at least prior to the advent of the TNCs several years ago; most ADA paratransit services carry 1.2 to 1.8 trips per vehicle hour.

The consequence of using the dedicated vehicle service model is that cost per passenger for ADA service is very expensive, in many cases significantly more than would be the case if EVERY passenger was transported by regular taxi service. Of course, most taxi fleets could handle only a small portion of the ADA trips involving wheelchairs. However, this does not invalidate the fact that using the dedicated vehicle service model for all ADA trips has been a major factor in the high costs of ADA service. Moving away from exclusive or near-exclusive reliance on dedicated vehicle operations offers very substantial potential for reducing costs per trip and overall ADA service expenses.

The analysis of annual cost reduction estimates for multiple non-dedicated vehicle scenarios produced a set of trips to allocate to NDSPs which are associated with specific small geographic areas that can be implemented in Trip Broker as geo-fenced areas. These are thus operationally feasible strategies in the sense that incoming reservations can be allocated to dedicated vehicle or non-dedicated vehicle service providers by “programming” Trip Broker to allocate trips according to whether they are originating or destined to the geo-fenced areas identified by the methodology.

Annualized Cost Reduction		
Scenario	SCR Only	All City Providers
15% Diversion	\$4,230,434	\$10,576,085
26% Diversion	\$5,149,872	\$12,874,680
37% Diversion	\$6,903,728	\$17,259,320

It is clear that a substantial shift of trips to TAP is necessary for the ADA program to experience major cost savings. If 30% of the current ADA trips in the City shifted to TAP, and there was no increase in overall usage, annual savings of approximately \$18 million would result. But if those who shifted increased their usage by 25%, these savings would be reduced to less than \$13.5 million annually, or approximately 9% of the total cost of the ADA service operated by Pace.

3.2 Evaluation

Building on the outcomes of Task 6 (Modeling and Analysis of Potential Innovations) and as informed by previous tasks (Challenges, Potential Innovations, and State of Practice), Task 7 focused on evaluating potential innovations. The evaluation compared the likely impacts of potential innovations as well as the risks or constraints. Working collaboratively with the Project Management Team (and ultimately the Project Steering Committee and Advisory Committee) potential innovations that present the most promise have been identified. Presenting the most promise reflect the ability to increase the sustainability of the ADA paratransit program in consideration of the results of the technical analysis as well as ancillary policy considerations.

In order for a systematic analysis to be conducted, a consistent evaluation framework was developed. Evaluation criteria includes:

- Effectiveness in terms of the population served and in terms of the number of trips generated (ridership, by trip purpose);
- Economy - the total cost of providing the service; Consideration of such factors as: capital vs. operating costs, large capital outlays, and present-valued expenditures over the long-term;
- Efficiency - the cost per trip, per vehicle-hour, etc.; Costs to both user and to the funding partners.
- Level of service - reservation constraints, hours of service, frequency of service, trip purpose, etc.;
- Quality of Service - to the user; measured in terms: convenience, transfers, trip times, comfort, dignity, and flexibility (response time, advance booking requirement, etc.);
- Socio-economic factors - impact on employment and social well-being;
- Civil rights implications - delivery of services for persons with disabilities, integration, etc.
- Organizational issues such as operational flexibility, control and accountability, human and labor relations, and ease of implementation;
- Technical risk - if new or modified equipment is required; Ability of 'the appropriate authorities' to support the equipment (e.g. scheduling systems, vehicles, etc.);
- Political risk - the potential for changes in direction of Pace, County or State policies; and

- Financial risk - if large capital outlays are required.

An Evaluation Framework – ***Strategies Evaluation Matrix*** is provided below. The matrix includes the above noted criteria as well as the following Guiding Principles and Goals.

Guiding Principles

- Preserve Integrity of Pace Paratransit
- Maximize Use of Investments
- Compliance with ADA / Title VI
- Fiscally Responsible and Accountable

Goals (RTA Strategic Plan)

- Deliver on Investment (including cost/efficiency considerations)
- Build on the Strengths of Network (service delivery)
- Stay Competitive (innovate, try new things, employ new technologies)

RTA/Pace - ADA Paratransit Innovations Study - Strategies Evaluation Matrix																		
Strategies	Guiding Principles				Goals (RTA Strategic Plan)			Evaluation Criteria										
	Preserve Integrity of Pace Paratransit	Maximize Use of Investments	Compliance with ADA / Title VI	Fiscally Responsible and Accountable	Deliver on Investment (including cost/efficiency considerations)	Build on the Strengths of Network (service delivery)	Remain Competitive (innovate, try new things, employ new technologies)	Economy - total cost of service	Efficiency - cost per trip, per veh. Hour	Level of Service	Quality of Service	Socio-economic factors / Equity	Civil Rights Implications / Legislative Compliance	Organizational - operational flexibility, control, accountability	Ease of Implementation	Technical Risk	Political Risk	Financial Risk
1	✓	✓	✓	✓			✓	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2	✓	✓	✓	✓	✓			☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3	✓	✓	✓	✓		✓		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4	✓	✓	✓	✓			✓	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5	✓	✓	✓	✓		✓		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
6	✓		✓	✓	✓			☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
7	✓	✓	✓	✓		✓		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
8	✓	✓	✓	✓			✓	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
9	✓	✓	✓	✓		✓		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10	✓	✓	✓	✓	✓			☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

4.0 Concept of Operations

This chapter presents a Concept of Operations for advancing innovative strategies in general. Specific pilot projects are described in Chapter 5 and include:

1. Same-Day – Consumer Choice Program;
2. Enhanced Use of Non-Dedicated Vehicles; and
3. Feeder Service.

4.1 Context

- Develop an innovation strategy to improve future sustainability of Pace Paratransit service.
- Diversify the way paratransit services are delivered, provide for additional service offerings.
- Key trends that may drive ADA paratransit demand in the Greater Chicago area include a shift in population in Cook County to Suburban Cook County region and the collar counties; ageing population; and increase in the population with disabilities and chronic illness.
- Current demand alone is resulting in increasingly unsustainable operational and fiscal burdens, related to the increasing cost to deliver ADA trips.
- Objective of project has been to identify promising potential pilot projects that could validate the effectiveness of certain strategies to improve cost-effectiveness and quality of service delivery system.
- Recognition that dedicated vehicle services for Pace Paratransit and virtually all large ADA paratransit services nationwide have poor cost-effectiveness and that alternatives exist to the exclusive use of this service modality.
- Increasing experience with non-dedicated vehicle service initiatives in multiple regions throughout USA—including City of Chicago ADA program—demonstrates that such services can be a major component of cost-effectiveness improvements for ADA paratransit.
- Other regions are undertaking new approaches and can provide Chicago region with an understanding of feasibility and likely impacts of key candidate strategies.
- Peer Review Workshop – Key Takeaways:
 - Same Day Consumer Choice Service
 - Peer agency program highlights (*'How they work'*) provided in Task 6 (Modeling & Analysis) Tech Memo
 - Important considerations:
 - Managing consumer expectations

- Dependency on service providers
- Potential for induced demand
- Implications for the TAP program
- MBTA situation shows that a motivated transit agency can get the TNCs involved (supported by Las Vegas experience)
 - RTA is advancing meetings with TNCs (Uber) to discuss service in suburban Cook County.

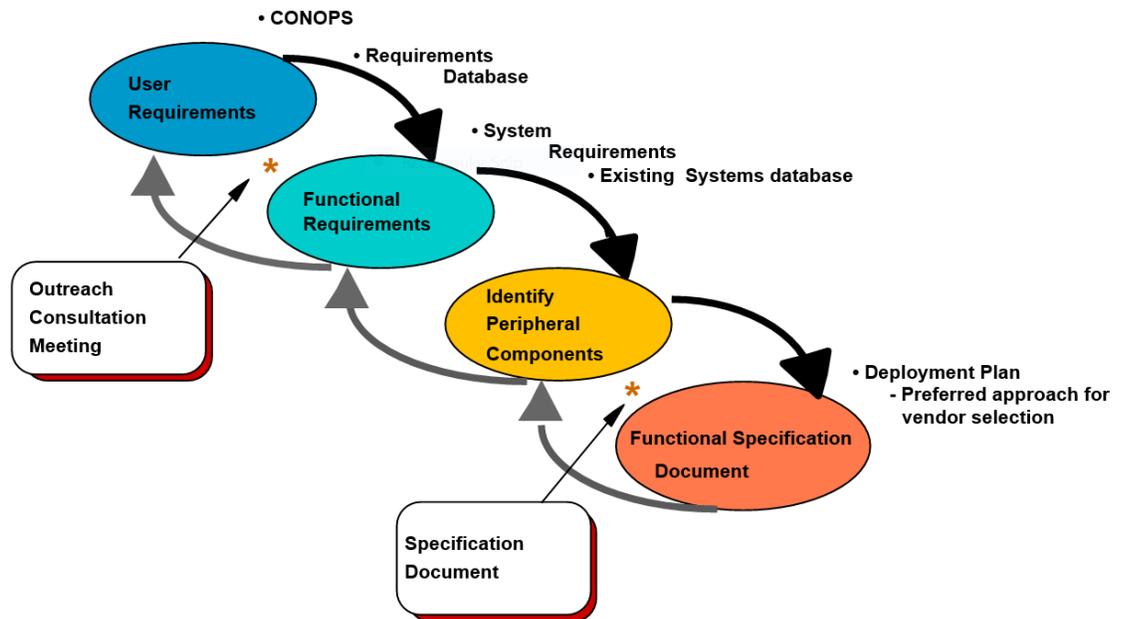
Substantial Use of Non-Dedicated Service Providers for “Regular” (Next Day) Service

- Houston and Nashville have used regular taxi service as core element of their ADA services for many years, up to 25% of trips delivered by taxis
 - Taxi delivery is more cost-effective than dedicated vehicle service

Feeder Service

- Houston experience: the feeder service option is worthwhile and less expensive than serving the entire end to end trip
- But very limited use by customers (4 years of experience) and therefore its desirability is a function of how one can limit the initial and on-going resources needed to make such a service operational and easy to engage for a customer.

Concept of Operations (CONOPS) Overview



5.0 Action Plan – *A Way Forward* - Pilot Projects

This chapter presents an Action Plan to advance the following pilot projects:

1. Same Day - Consumer Choice Program

On-demand service to Pace paratransit customers. Pilot with one or more non-dedicated service providers (NDSPs). Customers can book trips right from their smartphone, instantly—or call in for reservation service. Cost effectiveness and enhanced customer experience borne out by analysis and peer experience.

2. Enhanced Use of Non-Dedicated Vehicles

Build on current success with use of non-dedicated service providers (NDSPs) and expand the use to include TNCs. Analysis identifies the increased use of NDSPs and a reduction in service by dedicated vehicle operations as the most financially impactful option.

3. Feeder Service

Use of dedicated and NDSPs as a feeder to accessible bus and rail services, addressing ‘first and last mile’ challenges.

5.1 Same Day – Consumer Choice Program

Overview:

The purpose of the proposed Same Day Consumer Choice pilot project is three-fold.

First, to extend the consumer choice mechanism beyond the City of Chicago’s TAP program into suburban Cook County and other suburban services areas in the region where such a program may be viable and cost-effective.

Second, to expand the available service providers beyond the taxi industry to include the TNCs, notably Uber and Lyft. This will increase both the service provider options available to ADA clients and—there is every reason to believe—the availability of service to customers.

Third, to broaden the payment options for consumers—and improve the ease of payment—by making digital payments feasible including payments linked to the customer’s Venra card.

The Consumer Choice Program pilot project has multiple elements that will require analysis, planning, and decision making prior to the launch of the new service. These include the choice of the service area for the pilot project, the specific taxi and TNC providers who will be involved, how consumers will engage their selected service

On-demand service to Pace paratransit customers. Pilot with two or more non-dedicated service providers (NDSPs). Customers can book trips right from their smartphone, instantly—or call in for reservation service. Cost effectiveness and enhanced customer experience borne out by analysis and peer experience.

provider, whether and how supplementary WAV service will be provided, possible enrollment limits on ADA registrants, whether service availability will be rationed or otherwise constrained and how—by trip limits and/or subsidy limits, the operating plan for the program including technology and payment options and the role of the call center, the development and implementation of both a marketing campaign and a service monitoring and evaluation plan. Once the service is implemented, it will undoubtedly need to be adjusted, and options for likely adjustments will need to be developed prior to the actual implementation of the pilot project.

Staff Resource Requirements: It is likely that it will require at least 12 to 15 months from the start of the analysis and planning process until the initial operations of the service. Based on the experience of the MBTA with its consumer choice program, which appears to be the most sophisticated in the country and one of the most successful—if not **the** most successful. It is anticipated that the RTA and Pace will need to allocate 3 staff members, and possibly more, to the pilot project. Further, that an average staffing level of 0.75 FTE—at a minimum—will need to be assigned to the pilot project across the 2 agencies. In addition, RTA/Pace may wish to consider using a consultant to assist the staff with the program design details (estimated cost: \$60,000 to \$75,000). Further, a third-party may be needed to develop a customer marketing plan and to oversee implementation of that plan (estimated cost: \$50,000 to \$60,000), although such a marketing plan could conceivably be developed in-house by Pace and the RTA if the necessary resources and expertise exist within the agencies.

Major Activities:

The following major activities will need to be undertaken to move the Consumer Choice Program pilot project from concept to full implementation. We have noted whether the activity will primarily involve the work of agency staff and/or consultants. Where necessary and appropriate, we have briefly explained certain activities.

- (1) **Determine service area for pilot project** - North and South Cook County.
- (2) **Determine how program should function for users** – Program design parameters replicate that of current TAP.

Program Design Parameters (Requirements):

- ADA registrants required to register to participate. (TAP model for registration)
- Mobile app/payment – options (must address design parameters/trip tracking):
 - Curb Mobility (build on current relationship with Pace)
 - TNC app – credit card attached to account
 - Ventra card integration (longer-term)
 - Call center – ability of unbanked to participate (Title VI compliance)
- \$3 fare per ride for taxi/TNC ride worth up to \$30 per ride. Registrants pay any meter rate above \$30.
- Up to 8 one-way rides per day.

- a) Order taking approach/trip requests – expectation that vendor will supply platform
- b) Payment mechanisms (cash, debit/credit, Ventra, other), web, in-app and other mechanisms
 - Procurement instrument to specify unbanked to buy pre-paid debit card.
- c) Limitations on enrollment for pilot, phased growth during pilot
- d) WAV guarantee or not—if guarantee, access mechanisms (e.g., via call center, app)
- e) Determine any potential agency liability (risk or exposure)⁶

Key Milestone: Core Pilot Project Approach Document

Q4-2020

(3) Preparation of Request for Interest (RFI) – taxis/TNCs

- a) Determine interest in participation
- b) Determine program parameters willing to agree to
- c) Assess feasible booking and payment options for both taxis and TNCs
- d) Single taxi app (e.g., Curb) or company-determined or branded (e.g., 303 and American Taxi have own apps)?
- e) WAV capabilities of taxis, and arrangements via TNCs if applicable

Key Milestone: Preparation of RFI

Q3/Q4 - 2021

(4) Develop Operating Plan for Program—consultant and agency staff

- a) Providers—eligibility confirmation (e.g., coupon plus identity mechanism, difference between how this works for different platforms), co-payment mechanism, enforcement of trip or trip cost limits, Ventra role in payments (integration with other platforms for payment)
- b) Develop procurement document that providers must respond to and agree to the terms and conditions of the program, may be tailored to type of company—consultant activity
- c) RMMCC Call Center role and responsibilities—phone orders, determination of provider selection, mechanisms for pass through of trips to providers

⁶ The MBTA's safety team has always taken the position that, for consumer choice trips, these are not in fact MBTA customers once they step in the vehicle. That being said, MBTA also requires a certain level of insurance to be carried by their providers.

- d) Users—booking channels, how trip limits are imposed, payment options, same for all providers or different for taxis (cash payments), access to information and assistance
- e) Technology
 - 1. Options for customers to access the service providers—app, web, phone
 - 2. Ventra card for payment
 - 3. Other payment mechanisms

Key Milestone: Pilot Project Operating Plan

Q4-2021

Key Milestone: Scope of work/procurement document to engage taxis and TNCs and any other services or technology providers needed for pilot program

Q1-2022

- (5) **Develop Consumer Marketing Plan**—agency staff and marketing consultant
 - a) Customer usage parameters
 - 1. Develop options for customers—subsidy levels, trip levels, “package options”
 - 2. Design materials (on-line, hard copy) for communicating options to customers
 - 3. Develop protocols for provider/customer/Pace interactions for key use cases
 - b) Determine characteristics of pilot project users
 - 1. Determine priorities for user types
 - 2. Estimate numbers of users in different categories
 - 3. Determine minimum number of users for viable pilot project
 - c) Ventra card integration
 - 1. Determine timeframe for Ventra card integration with payment for TNCs and taxi payment platform
 - 2. If integration timeframe > X months, start pilot without Ventra integration
 - 3. If integration timeframe < X months, but not all platforms can be integrated, determine if Ventra should be enabled for feasible platforms
 - d) Branding, marketing/communications strategy

- e) In pilot project service zones, notify ADA registrants of new program and solicit initial participants
- f) Select eligible participants for initial phase of pilot project

Key Milestone: Plan for target group(s) selection, enrollment, and marketing

Q2-2022

- (6) **Develop monitoring and evaluation framework**—consultant and agency staff
- a) Determination of appropriate tools for Pace oversight of TNC and taxi use by pilot project participants on near real-time basis
 - b) Develop near real-time (daily) data reporting approach by service providers to Pace
 - c) Design/develop desktop analysis and reporting capabilities for Pace staff to enable timely intervention into program (cycles of days and weeks, not months)
 - d) Provide tools and/or mechanisms for program participants to monitor their own usage
 - e) Develop evaluation framework
 1. Determine what factors need to be evaluated
 2. Determine what data can be readily sourced for evaluation
 3. Determine measures of success—for clients, for service providers, for Pace
 4. Finalize evaluation framework based on feedback from clients, service providers, agency staff, community groups, and policy makers

Key Milestone: Detailed plan for trip monitoring and service evaluation **Q2-2022**

- (7) **Implement Marketing Plan** for pilot project and enroll pilot project participants—agency staff, third parties in community as appropriate

Key Milestone: Participant registration for new program

Q2-2022

- (8) **Deployment/Implementation** (& monitoring/evaluation)
- a) Deploy to user groups in order of precedence
 - b) Monitor results
 - c) Adjust program parameters as necessary and appropriate
 - d) Continue roll out to all user groups
 - e) Continue evaluation and adjustments for duration of pilot period

Key Milestone: Deployment of program and implementation of monitoring and evaluation activities

Q3-2022

5.2 Enhanced Use of Non-Dedicated Vehicles

Overview:

The purpose of this pilot project is to validate the technical and operational feasibility of using non-dedicated service providers (NDSPs) on a much more substantial basis for “regular” (next day) Pace ADA paratransit service in the City of Chicago. It may also be feasible to make substantial use of NDSPs in other ADA service zones in the region, but as over 75% of ADA trips and expenditures are connected to the City’s portion of the program, this is the initial focus of this initiative.

The objective of the pilot project is to allocate as much as one-third—or more—of all regular ADA trips to NDSPs in such a way that the overall cost-effectiveness of the service is improved by at least 15% compared to the current situation, in which about 10% of the trips, focused heavily on long trips, are allocated to a number of taxi companies.

In order to achieve this objective, it will be necessary for Pace to work with Trapeze and, using PASS, the Trip Broker module, and potentially another software module, implement a process that enables newly booked trips to be allocated to either

dedicated vehicles or to NDSPs so as to optimize the cost-effectiveness of the overall service delivery results for an entire day’s trips. Based upon current knowledge of the capabilities of Trapeze PASS and Trip Broker, and the results of analytic modeling on this project, such an approach appears to be technically feasible. The first major activity of the pilot project will be to validate this approach with the direct involvement of Trapeze software and resources.

Assuming that the feasibility of this approach is validated, it will then be necessary to devise the specific technical approach—including selection of software to interface with PASS and Trip Broker in the day to day production setting of the Pace Trapeze environment. Because increasing the allocation of trips to NDSPs implies a reduction in the deployment of dedicated vehicles, it is also necessary to implement tools (existing or new) that will enable Pace to determine the appropriate reduction in dedicated

Financial Validation

Pace:

- Cost/trip: \$39.79
- Trip distance: 9.6 miles/trip
- Cost per mile: \$4.15

Taxi:

- Cost per mile: \$3.49
- Cost for 9.6-mile trip = \$33.50
- Less user fare: \$3.00
- Net cost/trip = \$30.50

TNC:

- Cost per mile: \$1.85*
- Cost for 9.6-mile trip = \$17.76
- Less user fare: \$3.00
- Net cost/trip = \$14.76

* Reflects distance, time & booking fee charges. Does not reflect any surge pricing.

vehicle operations. These tools will need to include the capabilities to generate realistic—and if possible, optimal—vehicle run structures for the dedicated vehicle service providers.

If these technical results can be achieved, it will then be necessary to determine the collective capacity of NDSPs for the City of Chicago program. To date, the NDSPs used by Pace for this program have been limited to taxi companies. It may continue to be the case—for both regulatory and business reasons—that taxi companies will continue to be the only realistic choice of NDSP providers for the next day service. However, it would be desirable to broaden the availability of supply to include TNCs if possible. There are multiple reasons that TNC involvement may not be feasible, and this situation will need to be carefully assessed.

Staff Resource Requirements: In order to achieve the objectives of this pilot project, Pace is likely to need to allocate internal staff resources to the activities and to also engage Trapeze and possible other technology and/or consulting companies to assist the agency in devising and implementing the technical approach. It is estimated that Pace will need to allocate 1 to 2 staff members to monitor and assist with the activities, at a total staffing level of approximately 0.25-0.33FTE for an estimated 9-month duration of the pilot project. Most of the technical work will need to be accomplished by Trapeze staff and/or other technology/consulting company resources. If a technology/consulting company needs to be engaged, an estimated cost of that engagement would be on the order of \$40,000 to \$75,000. The role of Pace staff will be to oversee these activities and to also ensure that all relevant operational factors are given appropriate consideration. In addition, Pace staff will be responsible for determining the adequacy of NDSP capacity (and the willingness of the providers to allocate that capacity to Pace) for substantially increased use of taxis and other non-dedicated vehicles and the ability to provide accessible services.

Major Activities:

The following major activities will need to be undertaken to implement the Enhanced Use of NDSPs pilot project. Also noted is whether the activity will primarily involve the work of agency staff and/or consultants. Where necessary and appropriate, certain activities have been briefly explained.

- (1) Determination of technical feasibility of proposed approach—consultant and agency staff.
 - a) Validate ability of PASS and Trip Broker to utilize a trip by trip calculation of a “dispersion score” (based on a scaled metric) as a means of allocating trips to dedicated vehicles or NDSPs.
 - b) Validate ability of Trapeze process to include internal or external software module that uses trip dispersion metrics to determine whether trips should be allocated to dedicated vehicles or NDSPs.

- c) Validate quality and stability of trip dispersion metrics as appropriate means for making provider allocation choice for incoming trip bookings.
- d) Simulate or otherwise analytically test methodology(s) for performing trip allocation to dedicated vehicles or NDSPs.
- e) Validate that technically feasible and effective end to end process exists for providing trip allocation for City of Chicago ADA services.
- f) Document process and review with Pace management of ADA program.
- g) Pace management makes determination on technical feasibility and merits of proposed approach.
- h) Pilot project may be terminated at this point or may move forward to next activities.

Key Milestone:

Determination of whether NDSP allocation approach is sufficiently robust and technically feasible to implement in Trapeze environment and therefore should be implemented and incorporated into booking and scheduling of regular ADA trips by Trapeze system **Q3 - 2022**

- (2) Activities to qualify customers to use NDSPs in advance of trip making so that trips can be assigned without customer permission and knowledge when appropriate—agency staff.
 - a) Pre-determination of all ADA program registrants' willingness to use taxis (and/or TNCs).
 - b) Priority scheme (simple) for selecting best user candidates for assignment to NDSPs.
- (3) Determination of how many additional trips could be diverted to taxis before service provider limitations are reached, for different parts of City and region—agency staff.
- (4) Potential introduction of TNCs into program—agency staff
 - a) Regulatory restrictions on assigning trips to TNCs without consumer choice—significant enough to eliminate this option?
 - b) Willingness of TNCs to accept trips assigned by Pace rather than via customer selection of provider.
 - c) Determination of whether any use of TNCs is feasible and appropriate.

Key Milestone:

Decision on whether to include TNCs in program and determination of capacity limits on specific taxi companies and other NDSP providers **Q3 - 2022**

- (5) Implement technical approach to allocation of trips to NDSPs—Trapeze, technical consultant, agency staff.
- a) Trip allocation approach/parameters—algorithm for trip assignment based on dispersion metrics.
 - 1. Refine geographic density and distance-based approach to determining optimal trips to divert to NDSPs.
 - 2. Embed algorithmic approach(es) in software linked to PASS and *Trip Broker*.
 - b) Develop approach to determine new level of dedicated vehicles for reduced number of trips allocated to these providers.
 - o Analytic/computational process for generating new run structure
 - o Process for ensuring that new run structure is both feasible for provider and delivers maximum cost-effectiveness
 - c) Develop approach to allocate trips among NDSPs and to alter allocation based on performance of providers.

***Key Milestone: Technical strategy and implementation of strategy in Trapeze
PASS environment to actualize NDSP allocation process Q3 - 2022***

- (6) Deployment & monitoring—agency staff.
- a) Develop robust monitoring framework that continually assesses effectiveness of allocation approach.
 - b) Deploy methodology and begin allocating higher percentages of trips to NDSPs.
 - c) Adjust parameters of algorithmic approach to maximize NDSP effectiveness based on on-going assessment.
 - d) Adjust approach to re-allocation of trips among NDSPs based on actual provider performance vs. expectations.
 - e) Increase allocation of trips to NDSPs until target level is reached.

***Key Milestone: Plan for on-going monitoring and adjustment of allocation
practices including re-allocation of trips among NDSPs Q3 - 2022***

Key Milestone: Deployment of strategy using methodology Q4 – 2022

5.3 Feeder Service

Overview:

The purpose of the Feeder Service pilot project is two-fold.

First, this service will provide a financial and quality of service incentive to ADA program registrants to shift long trips to a combination of an on-demand feeder service to nearby CTA rail or Metra stations followed by a journey on the rail system to a station near their final destination. Feeder service to major bus terminal points could also be an eligible use. Customers would ride for free for the feeder service component of their trip, and they would be able to book the trip the same day they are taking it rather than the day before as with regular ADA service.

Second, when ADA trips are shifted from current ADA service to this combination of services, there will be a significant financial benefit for Pace (and the region) for almost every trip that is shifted. The cost to the ADA program of trips made in this way will usually be substantially less than if those trips had been made via the conventional ADA paratransit service. “Regular” ADA trips cost an average of more than \$35 in subsidy, whereas these feeder service trips are expected to cost less than \$15 in subsidy.

Based on analysis conducted as part of this project, it is recommended that the Feeder Service pilot project be initiated after the implementation of the Same Day Consumer Choice project. The prior analysis indicates that establishing a feeder service component specifically for the current ADA program (next day service based on dedicated vehicle operations) is not likely to yield outcomes significantly more cost-effective than the current program.

By basing Pace’s Feeder Service pilot project on the same day Consumer Choice service (for the feeder component), trips can be delivered for a much lower cost than would be the case if the regular ADA service were used. A 3-mile feeder trip to a CTA or Metra station delivered by a taxi or TNC via the Consumer Choice approach is unlikely to cost more than about \$10-12 in subsidy, even with a free fare to the traveler, whereas the subsidy for a regular ADA trip is likely to be 2 to 3 times greater.

Moreover, by utilizing the Same Day Consumer Choice pilot program for this pilot project as well, no new service modality needs to be created for Feeder Service. The Feeder Service easily and automatically scales if it proves to be popular—these are just

Houston MTA

The implementation of a well-designed feeder service program in Houston (for the MTA, the regional transit agency) resulted in very low ridership of that service component, fewer than 100 trips per day in a program with 6,000 trips per day. The Houston program has been well-promoted by the agency and service delivery has been of good quality, but most ADA program participants—for whatever reasons—have not manifested interest in using this service.

additional trips in the consumer choice program and such trips can be designated as not counting against any trip limits for an ADA customer in that program.

The Feeder Service pilot project can be easily rolled out after the Consumer Choice pilot project is operating satisfactorily. There will need to be a means of identifying the feeder service trips when they are booked—which will be based on their origin or destination being a CTA rail station or a Metra station (and potentially major bus stations)—which then triggers the \$0 fare payment situation, but in most other respects these trips are just like other Consumer Choice trips.

Staff Resource Requirements: Given the seemingly straightforward nature of the proposed approach to the Feeder Service program, the staff resources to develop this plan appear to be quite modest. We anticipate that an agency staffing level of 0.3-0.5 FTE—involving no more than 2 staff members from Pace and potentially the CTA (Metra participation might also be needed from a fare payment perspective)—will be needed for 2 to 3 months of planning and pre-implementation activities. A customer marketing plan also needs to be developed, possibly involving a consultant but potentially developed in-house by Pace and the RTA (and CTA and Metra if deemed necessary).

Major Activities:

The following major activities will be needed to be undertaken to move the Feeder Service Pilot project from concept to full implementation. Note that all activities should lag those for the Consumer Choice pilot project by at least one quarter (three-month period), as that pilot project need to be providing operational experience prior to certain decisions being taken for the Feeder Service project.

(1) Program Design—agency staff

- a) Determine service area for initial implementation of pilot project—should be a subset of the service area for the Consumer Choice pilot project with the most promising market situation for feeder service to rail stations
 1. Distance limits on trips?
 2. Time of day limits on trips?
- b) Determine eligible ADA user population, with specific reference to conditional eligibility
 1. Same eligibility as consumer choice program?
 2. No trip limits for conditionally eligible?
 3. No trip limits for any customers?
- c) WAV situation—guarantees for specific stations or in areas with taxi WAVs?
- d) Fare policy
 1. Always free fares?

2. Non-zero feeder fares for conditionally eligible? Or X number of free trips with some groups having different X values or 0 free trips?
 3. Ventra card utilization and technical issues associated with fare scheme implementation.
- e) Integrated trip planning functionality
1. MaaS trip planning a pre-requisite for implementation?
 2. Accessible rail stations need to be known in MaaS or other trip planning software.
 3. Self-service options and/or call center options.
- f) Outbound trips from stations
1. How to book rides in timely fashion so taxis/TNCs don't wait too long and abandon trips.
 2. Different level of service guarantee for outbound trips.
 3. WAV situation for outbound trips—how to prevent customer being stranded?
- g) Call center role in recommending feeder options and booking
- h) Call center technology and staff resources & training

Key Milestone: Program design plan for feeder service

Q3/Q4-2022

(2) Deployment Options—agency staff

- a) Deploy initially at limited number of stations or in entire geographic zone.
- b) All modes initially or rail only or CTA rail only (all relevant options to be assessed).
- c) Handle all user types the same initially or different fare and/or usage limits for regular vs. conditionally eligible.
- d) WAV trips guaranteed? Guaranteed for specific stations?

Key Milestone: Service Deployment with selected option(s)

Q1-2023

5.4 Deployment Schedule

For each of the preferred strategies, key milestones and dates as identified in Sections 5.1 through 5.3 are presented in the following deployment schedules. The schedules present deployment elements, roles and responsibilities, timeframe (by quarter through to Q1 of 2023) and key milestones/deliverables.

Same Day – Consumer Choice Program

Strategy	Deployment Elements	Roles, Responsibilities	2020	2021					2022				2023	Key Milestone/Deliverable	
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1			
Same Day - Consumer Choice Program (Pilot)	Determine Service Area (conceptual)	Pace, RTA, consultant													COMPLETE: Core Pilot Project Approach Document (concept) Final Operations Plan to complete in Q3 & Q4, 2021
	Determine How Program Should Function (conceptual)	Pace, RTA, consultant													
	Preparation of RFI (Interest)	RTA/Pace													
	Solicit interest														Plan for involvement of taxis & TNCs
	Criteria (parameters) for participation														Specification of parameters for participation
	Program Design Parameters	RTA/Pace													
	Call center resources & training	Pace													Operations Plan - complete Q3/Q4, 2021 (with exception of Ventra card integration)
	Customer usage parameters	RTA/Pace													
	Ventra card integration	RTA/Pace													Ventra card integration - an enhancement not on critical path for implementation
	Development of <i>Scope of Work</i> /Procurement Instrument	RTA/Pace/Consultant													
	Functional specification														
	Determination of (SaaS) platform														Scope of Work/Procurement Document
	Procurement - RFP, evaluation, award,														
	Branding, marketing/communications strategy	RTA/Pace/Consultant													Branding, marketing/ communications strategy
	Program participant registration	Pace													Program participant registration
	Program participant trip monitoring	Pace													Detailed plan for trip monitoring and service evaluation
	Development of evaluation framework	RTA/Pace/Consultant													
Deployment/Implementation	Pace													Deployment and implementation of monitoring and evaluation activities	

Enhanced Use of Non-Dedicated Vehicles

Strategy	Deployment Elements	Roles, Responsibilities	2020	2021				2022				2023	Key Milestone/Deliverable
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	
Enhanced Use of Non-Dedicated Vehicles	User requirements	Pace											Technical strategy and implementation of strategy in Trapeze PASS to actualize NDSP diversion
	Functional requirements - <i>Trip Check</i> & <i>Trip Broker</i>	Pace											
	<i>Trip Broker</i> - interface requirements	Pace/Consultant											
	User defined parameters - scheduling optimization algorithm	Pace											
	Staff resources & training	Pace											Plan for on-going monitoring and adjustment of diversion practices including re-allocation of trips among NDSPs
	Deployment & monitoring	Pace											

Feeder Service

Strategy	Deployment Elements	Roles, Responsibilities	2020	2021				2022				2023	Key Milestone/Deliverable
			Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	
Feeder Service	Program design	Pace											Program design for service
	Service delivery options/determination (dedicated, NDSPs, hybrid)	Pace (RTA)											
	Fare policy	Pace											
	Application of <i>conditional</i> eligibility - (first/last mile)	Pace (RTA)											
	Integrated trip planning functionality	Pace (RTA)											
	Call center resources & training	Pace											
	Deployment & monitoring	Pace											Service deployment with select option(s)