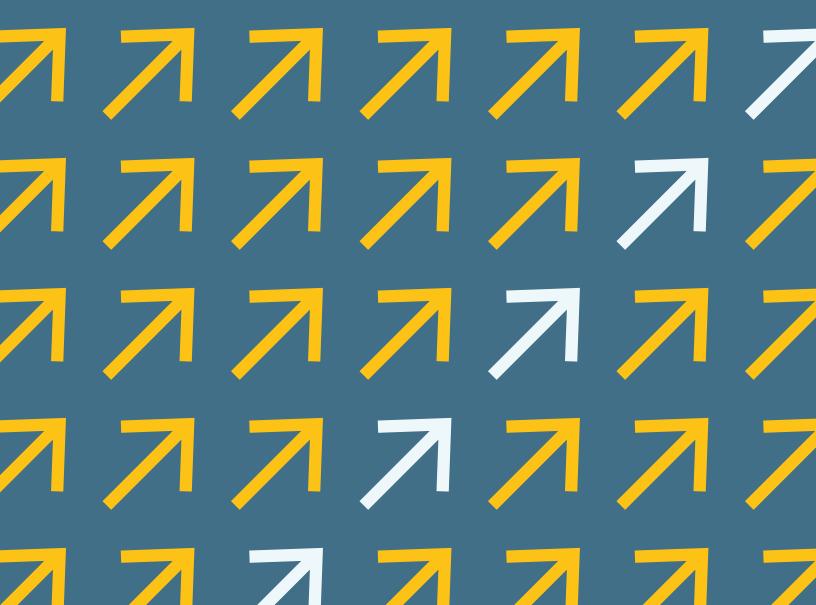
ANEW RIDE FOR NEW JERSEY

Building a Better Bus System



"IT'S TIME FOR **NEW JERSEY** TO RETHINK THE BUS."

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A New Ride for New Jersey

executive summary

New Jersey is the most densely populated state in the country, and its people and economy depend on access to a modern and efficient transit network. Over the past 10 years, the state has failed to provide sufficient funds to meet the needs of New Jersey Transit (NJ Transit), even as a growing population places increasing demand on the state's transportation network. While much of the public's attention has focused on commuter rail and light rail systems, bus systems have experienced neglect as well.

Today, more than half of all NJ Transit trips are made by bus; bus service remains the most affordable transportation option in many communities, and for neighborhoods without access to commuter rail or light rail, it is often the only public transit option. NJ Transit has 3,043 buses that operate on 252 routes and 6,268 route miles. Buses make about 15,356 trips a day and serve over 16,100 bus stops, carrying about 33 people per trip on average—and many more on high ridership routes.¹

From 2015 to 2017, annual bus ridership in New Jersey fell by nearly eight million rides (five percent), continuing a recent trend of fewer New Jerseyans riding the bus. Since its peak in 2009, bus ridership has declined in New Jersey by more than 7.3 percent. Because farebox recovery is crucial to a cash-strapped agency like NJ Transit, this decline has an outsize impact on operational funding. Of all NJ Transit trips, buses still account for 58 percent of rides, but this proportion has dropped steadily as commuter rail and light rail ridership has increased, despite reaching far fewer communities than the bus network.²

Bus

Rail

Light Rail

8.9%

32.8%

58.3%

Despite declining bus ridership, the majority of NJ Transit trips are made by bus.

Every day, buses connect hundreds of thousands of people to jobs, schools, and other critical services while taking

up far less space on the road and emitting fewer greenhouse gases than private vehicles. As fewer commuters choose to ride the bus, more people squeeze onto overcrowded trains and, alarmingly, more cars congest our already gridlocked streets. The state's hub-and-spoke commuter rail system continues to be a good option for people who live and work near NJ Transit rail lines, but many communities lack access to the network. Without more investment in bus service, New Jersey risks more people abandoning transit for more expensive and less environmentally friendly options.

There are many reasons for declining bus ridership, including a complicated fare structure, outdated bus routes, a lack of user-friendly navigation tools, growing transportation options, and sprawling development in areas that are difficult to reach by transit. Further compounding the problem, under the administration of Governor Chris Christie the state subsidy for NJ Transit plunged by more than 90 percent.³ Gaping holes in the agency's budgets were subsequently filled by fare increases, transfers from the capital budget to the operating budget, and service reductions or other cuts. Slow and unreliable service on many bus routes has also contributed to many commuters abandoning the bus. With gas prices low and new options like ride-hailing services available, New Jerseyans are

increasingly eschewing mass transit. With more cars on the road, many buses frequently get stuck in congestion, especially when approaching bridges and tunnels that connect New Jersey with New York City and Philadelphia. New Jersey has done little to separate buses from congestion caused by personal vehicles, with only eight miles of dedicated bus lanes, compared to over 120 miles in neighboring New York City.

Lower quality bus service has major equity impacts. A disproportionate number of bus riders live in low-income communities or work in places that lack access to the rail transit system. While substandard bus service discourages higher-income residents from choosing mass transit over private vehicles, low-income New Jerseyans who depend on the bus are hurt the most by declining service.

The result is that now New Jersey's transportation system has not caught up with the state's needs. Looking ahead, unless service quality improves, NJ Transit will be even further behind—and almost certainly too far to be saved. We need to take bold action now. New Jersey commuters, elected officials, and transit agency leaders must work together to increase mass transit investment, modernize the state's bus network, and boost ridership. To achieve these goals, Tri-State Transportation Campaign calls for the state and NJ Transit to take the following steps:

Make using the bus easy and intuitive: Creating a more welcoming and easy-to-use bus system will help make NJ Transit the preferred mobility option for many more commuters. Bus schedules and maps should be designed to emphasize service frequency and transfer points to show how NJ Transit's bus and rail systems work together to create a network that can move the whole region. Unifying the bus and rail systems with consistent station design standards, amenities, branding, and sufficient wayfinding will improve the commuting experience and make transferring between bus and rail seamless for riders.

Design streets to prioritize buses: Public transit is often treated as an afterthought in New Jersey street design. Dedicated bus lanes and transit signal priority should be drastically expanded throughout the state to make bus service faster and more reliable. NJ Transit should also work with municipalities to create and implement design, amenity, and safety standards for bus stops and shelters throughout the bus network. Prioritizing buses in street design will provide more transit-oriented development opportunities beyond train stations, and this should be incentivized by the state by revamping Transit Village legislation.

Redesign the bus network: Despite population growth and shifting commute patterns statewide, NJ Transit has not made major changes to its bus network since the agency was established in 1979. The agency should conduct a bus network redesign to serve the needs of riders today, provide more connections to intermodal hubs, expand bus rapid transit service, and rebalance bus stop spacing to increase bus speeds. As public transit agencies around the country undertake ambitious goals toward electrifying transit fleets to meet climate goals, NJ Transit should also stop purchasing diesel buses and commit to an aggressive electrification timeline.

Modernize fares: Bus fares should be easy to understand and paying the fare should be a simple process. NJ Transit can achieve this goal by introducing a flat fare for intrastate bus service, making bus transfers free, streamlining the mobile app payment process, and introducing more on-board payment options. Allowing riders to pay their fare prior to boarding will make it possible for NJ Transit to introduce all-door boarding on high-frequency bus routes, reducing dwell times and improving service reliability. To boost ridership and make transit more equitable, NJ Transit should also implement more comprehensive discount programs for college students, low-income residents, and senior citizens.

Better data collection and transparency: NJ Transit does not currently collect sufficient data to develop accurate performance metrics, which is necessary for the agency to make valuable and targeted adjustments to bus service. Smart Bus technology should be deployed to collect high-quality data for a new, public online bus performance dashboard that displays customer-focused performance metrics, including Excess Wait Time statistics, accurate passenger counts, and dwell time data. Implementation of a comprehensive open data policy will also allow third-party app developers to create more tools that can help riders plan trips, avoid delays, and be informed of service changes in real time.

Increase Funding: The biggest obstacle standing in the way of substantive improvements to NJ Transit's service is a lack of dedicated and reliable funding sources. For over twenty years, the state has systematically underfunded NJ Transit, causing the agency to transfer money from its capital budget (used for modernization and expansion projects) to its operating budget (used for running the system). This cannibalistic funding practice must be abandoned and the state and agency must work together to establish dedicated funding streams. In addition to increasing the state's direct subsidy, NJ Transit should also generate revenue through other means, such as a new market strategy, public-private partnerships, policies like the Transportation & Climate Initiative, and capitalizing on the agency's existing assets.

Upgrading bus service requires leadership not only from NJ Transit, but from our elected officials and city agencies, as well as real engagement with riders, advocates, and community leaders. As bus service continues to fail to meet the needs of riders, NJ Transit must launch a multi-year effort with a renewed focus on improving bus service and getting New Jerseyans back on the bus.

"WENEED TO TAKE BOLD ACTION

introduction

New Jersey Transit (NJ Transit) buses play a crucial role in the region's public transportation network, connecting over 478,000 daily riders to jobs, school, family, friends, and other opportunities. Buses provide extensive service throughout New Jersey, especially in areas that do not have access to commuter rail.

478,000 DAILY RIDERS

However, NJ Transit's buses are slow, difficult to use, and unreliable—and the problem is only getting worse. Annual bus ridership peaked in 2009, and has since declined to numbers below the recession low despite an overall population increase.⁵ This is especially true for intrastate routes, in contrast to the stronger trends of bus and rail ridership between New York and New Jersey.⁶ As fewer people



Despite an increasing population, bus ridership has gone down in New Jersey since its pr in 2009. (data: US Census Bureau and New Jersey Transit)

use the bus, NJ Transit collects less farebox revenue, leading to cuts in service and quality, which in turn deters ridership even more. A decline in bus ridership means commuters are squeezing onto already crowded trains, opting to drive private vehicles, and sometimes even changing jobs to avoid commuting altogether. This destructive spiral not only strains an already fragile transportation network, it also results in cuts to regular service that hit low-income and minority communities the hardest.

NJ Transit was created in 1979 by acquiring and merging several private bus companies, and in the decades since, despite population patterns shifting, bus service and routing have not changed substantially. Some of the buses in operation today still follow the same route as the streetcar lines they replaced, riders still line up to board through one door, and the introduction of digital-age technology has not led to a revolution in bus efficiency or reliability. Simultaneously, New Jersey's rapidly changing patterns of land development, its shifting travel demands, and population growth are creating more traffic congestion that then results in slower buses and declining service reliability.⁷



It's time for New Jersey to rethink the bus. Drawing on best practices from around the country and the world, this report lays out how NJ Transit can fix its outdated bus network. Making buses faster and more reliable for current as well as future riders will require changes to many aspects of bus service: routes, the boarding process, dispatch and control, and street design. Equally importantly, lawmakers will need to address the perennial funding shortfalls NJ Transit faces: while bus service improvements are orders of magnitude cheaper than new rail infrastructure, many of the necessary fixes will require new investment. Ultimately, fixing the bus system will require leadership and collaboration from the state-run NJ Transit and Department of Transportation (NJDOT), and elected officials at both the municipal and state levels of government.

With highways and rail lines reaching capacity, fixing the bus system in New Jersey has never been so urgent. NJ Transit, NJDOT, and the elected officials who represent riders must address the problem directly, making it possible for New Jersey to reverse the bus system's decline and reclaim its place as a center of transit innovation and leadership, both regionally and worldwide.

7 A New Ride for New Jersey



New Jersey commuters who use public transit regularly are often only familiar with one or a few routes, and have limited knowledge of bus routes they don't use regularly. This creates a scenario where commuters may use the bus to commute to and from work, but opt to take a car for most other trips outside their normal routine. Creating a more welcoming and easy-to-use bus network will help make NJ Transit the preferred mobility option for many more commuters.

"MAKING A JOURNEY
COMBINING BOTH
BUS AND RAIL IS
NOTORIOUSLY
DIFFICULT."

Additionally, NJ Transit should encourage more rail-to-bus and bus-to-rail trips, which would reduce the number of people driving to commuter rail stations and the resulting problem of park-and-ride stations being frequently over capacity. Commuters often take the bus or the train, but making a journey using both modes is notoriously difficult. To encourage multimodal commuting, the bus network must be seamlessly integrated with the rail network. Currently, bus and rail schedules often do not sync to allow for efficient transfer points and there is often insufficient wayfinding to direct passengers between train platforms and bus stops.

The challenges NJ Transit faces in improving and encouraging multimodal commutes highlight a larger issue with NJ Transit: modal equity. NJ Transit train stations almost always have shelter and passenger amenities, but bus stops do not have the same quality of passenger shelters, wayfinding, and amenities. While service reliability concerns are certainly the most important consideration for any rider, quality-of-commute improvements begin at the bus stop. NJ Transit should ensure bus stops are safe, accessible, and protected from the elements.

In some key ways, NJ Transit has made strides toward making buses easier to use: the MyBus Now feature, available both via the website and app, allows riders to see when the next bus is arriving at a specific stop, as well as the bus route number and destination. However, a limited feature set and software bugs make it difficult to select different routes in the app, and comprehensive route maps are unavailable on the app. NJ Transit does provide some map information available on its website, but the web interface is obscured well below the home page and it does not show real-time bus locations.

The lesson from other transit systems is clear: the harder it is for customers to get information about a particular transportation option, the less likely it is that they will choose that option. Addressing ease-of-use issues, particularly when coupled with service improvements to increase speed and reliability, can improve the experience of existing riders, as well as attract new ones.

Redesign Bus Schedules & Maps

The implementation of the MyBus Now tool and NJ Transit app were big steps toward making the information that riders need, such as schedules, real-time arrival times, and route maps, readily accessible. However, there are still many gaps that keep important information from being available to riders. NJ Transit does not have a dedicated website or information portal for its bus system, making existing information difficult to find. The bus route maps and real time locations of vehicles are not available through the app, and many bus stops still lack the basic information that riders rely on to orient themselves at stations, understand the transit system, and get to where they are going. Making system data available to the public would enable and encourage developers and advocates to meet some of these needs for NJ Transit, allowing the agency to focus on providing these needs at bus stops and to riders who don't have smartphones.





Bus passengers at Newark Penn Station must decipher the many timetables to find the scheduled arrival times of buses

Integrate Bus & Rail Network

Instead of having rail and bus systems that largely operate independently of each other, the two systems should be better integrated to provide riders with a more seamless commuting experience. Part of integrating the bus and rail operations into one overall transit network requires removing the barriers that discourage people from taking the trip that's best for their needs. This goal can be accomplished through well-designed schedules, route maps, and system maps that specifically highlight bus and rail transfer points. Intermodal hubs should have consistent design standards, amenities, sufficient wayfinding, and branding so that the rider experiences NJ Transit's rail and bus network as a unified transit system. Going further, NJ Transit should examine bus and rail fare integration that will incentivize multimodal commuting, such as offering rail commuters a free or reduced-rate bus transfer to complete the "last mile" leg of the trip.

Add Passenger Amenities Onboard & at Terminals

For NJ Transit bus riders, frequency and bunching improvements are paramount, but for long-distance routes (of which NJ Transit, as a statewide transit agency, has several), NJ Transit should expand wifi access and make it free to use at stations and onboard buses. Currently, it is only available at select rail stations and it is free for only a limited amount of time. Expanding public wifi service to buses and bus terminals promotes customer safety, allows customers to more easily access information about the bus system, and stay occupied while waiting. NJ Transit should engage in negotiations to include these wifi and cellular upgrades, especially for regional/express bus service.

Amenities onboard NJ Transit's new articulated buses include USB charging ports, bicycle racks, an improved intercom system, and LED lighting. Future procurements should include the phase-in of these features on non-articulated, coach-style long-distance buses as well. Aside



Wifi is offered at select NJTransit stations. The service should be expanded to all stations, trains and buse:

from better route maps and schedule information, digital help kiosks at major stops would improve the passenger experience and make navigating the system easier for both novice and experienced riders. Amenities must be equitably distributed across routes and geographies. A 2017 report discovered NJ Transit distributed more shelters and buses along routes that served non-minority populations. Not only does NJ Transit need to continue to work to address this, future amenities such as wifi should also be distributed equitably from the start.

Brand the Network

Across NJ Transit's bus network, there should be consistent branding on buses and at bus stops, constancy in the deployment of the brand across media, and completeness of the commuter "brand experience" from beginning to end of the journey. For example, the Silver Line is the bus rapid transit (BRT) system of the MBTA and all of the buses are a distinct silver color, making them easily identifiable for riders. NJ Transit should use this model to establish distinct identities between services and communicate different brand messages (local, express, electric). The agency should also work with municipalities and local artists to incorporate and install public art at bus stops in order to increase their visibility, attracting more riders and potentially raising land values for transit-oriented development as well.



THE JOB OF
AS MANY AS
55 SINGLE
OCCUPANCY
CARS.

New Jersey street design, like much of the United States, prioritizes maximum efficiency for use of private vehicles, with every other mode of transit treated as an afterthought. However, one bus does the job of as many as 55 single-occupancy cars, bringing commuters to work, students to school, shoppers to small businesses, and visitors to vibrant and thriving destinations across New Jersey. Bus passenger loading areas are generally curbside in New Jersey, and buses pull out of a moving traffic lane to pick up passengers, where they often must wait for traffic to clear before merging into the travel lane again. Without prioritization through design, buses will continue to be stuck in traffic congestion, extending commute times and rendering bus schedules useless. This is especially true at peak travel times, when transit riders depend on efficient bus service the most.

Bus networks require certain features that car infrastructure does not, including safe and comfortable places for riders to wait for, enter, and exit the bus. NJ Transit bus shelters and bus stops are inconsistent in distribution and design, worsening the rider experience and deterring people from using the bus. Riders' safety is at risk when walking near the bus, as blind spots and poor design can result in injuries and fatalities. Prioritizing buses in street design would make bus service more reliable, improve the commuting experience, and subsequently boost ridership.

Implement Bus Lanes and Transit Signal Priority



New Jersey currently has roughly eight miles of dedicated bus lanes in four locations; Raymond Boulevard in Newark, Sip Avenue in Jersey City, Route 9 in Middlesex County, and the express bus lane (XBL) for buses traveling on I-495 through the Lincoln Tunnel. For comparison, New York City has over 120 miles of dedicated bus lanes, with plans to rapidly expand that number over the next few years. NJ Transit and NJDOT should work together to implement dedicated bus lanes along high-frequency corridors, especially on roads with significant traffic congestion. By designating a lane of traffic for public transit, buses can operate more efficiently. For new and existing bus lanes to be effective, private vehicles must be prevented from traveling and parking in the bus lanes. This can be accomplished by implementing road barriers and authorizing bus-mounted camera enforcement, which would automatically ticket bus lane violators.

In conjunction with bus lanes, Transit Signal Priority (TSP) can help improve service reliability by allowing buses to maintain a more constant speed and by reducing time spent at red lights. Studies have been conducted by the North Jersey Transit Planning Association¹⁰ and the Delaware Valley Regional Planning Commission¹¹ on which intersections in New Jersey are best suited for TSP, and NJDOT should start by putting the recommendations from these studies into practice.

Meet Kallita

Kallita Phipps lives in Union, NJ and relies on NJ Transit's bus #114 to commute to her job in New York City every weekday. Having lived in various parts of New Jersey since 1990, she is no stranger to the headaches that come with daily commuting across the Hudson River. Kallita is happy that NJ Transit recently upgraded the buses on her route, but she says there are bigger issues that cause her trouble when she takes the bus, especially the constant traffic congestion when entering and leaving the city during rush hour. Kallita explains, "it can be challenging to get into Manhattan because there's only one dedicated bus lane. It only takes one bus to break down for there to be major delays." She believes one dedicated bus lane into New York isn't sufficient to handle the high volume of daily transit riders and she hopes to see more bus lanes added throughout the state.



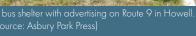


"IT ONLY TAKES ONE BUS TO **BREAK DOWN** FOR THERE TO BE **MAJOR DELAYS.**

DESIGN THE STREETS TO PRIORITIZE BUSES RECOMMENDATIONS DESIGN THE STREETS TO PRIORITIZE BUSES RECOMMENDATIONS

Improve Design and Quality of Bus Stops







Van Neste Square bus terminal in Ridgewood includes small building with seating. (source: own photo

Bus stops are where the transit system shakes hands with the rider, and they matter because of this initial impression. However, customer satisfaction with NJ Transit bus facilities is at its lowest point since 2011. Due to state law, municipalities have control over NJ Transit bus stops, which puts the agency in a less than ideal position to modify them. To create a better commuting experience for riders, NJ Transit should work with municipalities to create and implement consistent bus stop and shelter design standards throughout the bus network. Modern bus stops should have seating, lighting, trash cans, protection from weather, integration with bike facilities, and wayfinding information that includes schedules and maps. The number of bus shelters should be expanded to make the transit network more visible and user-friendly. An increased number of bus shelters also means an increase in additional revenue-generating ad space. While it is not cost efficient to provide all amenities at all bus stops, more expensive amenities should be added at high volume locations and basic amenities provided at very low volume stops. NJ Transit should develop a hierarchy of stops and define the types of amenities that should be provided based on that hierarchy.





Expand State Funded Programs



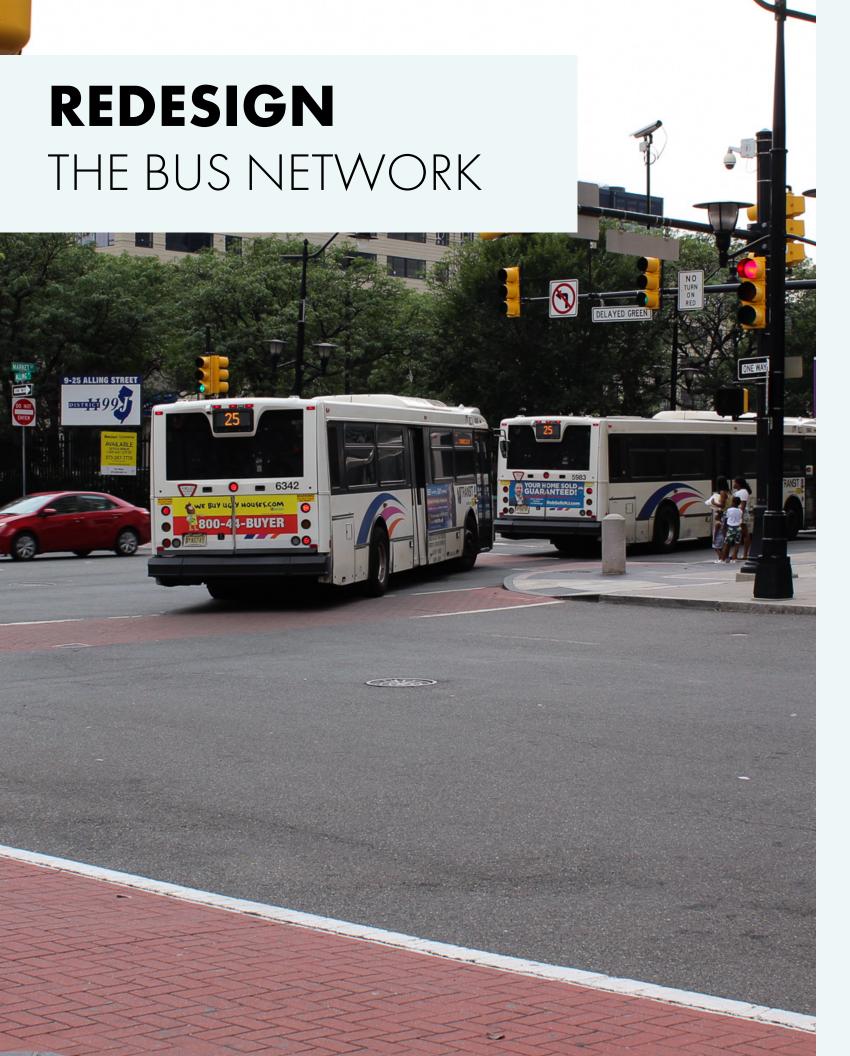
ansit Village is a mixed-use, transit-oriented design for downtown New Brunswick consisting of a 24-story building and a new

While NJ Transit has been a national leader in promoting transit-oriented development (TOD), NJ Transit's work with 32 municipalities to redevelop neighborhoods around rail stations has been piecemeal and lacks a larger vision that should include major bus corridors as well. NJDOT and NJ Transit should expand the Transit Village program by bringing municipalities along major rail and bus lines together to plan Transit Integrated Corridors of Growth (TICG). Traditional TOD in New Jersey is primarily focused on the neighborhood surrounding train stations, but high-frequency bus corridors present an opportunity to increase density in areas between major transit hubs, building a corridor of vibrant communities in the process.

In 2006, the state launched the Safe Streets to Transit (SSTT) program as part of a comprehensive Pedestrian Safety Initiative. This program provides funding to counties and municipalities to improve the overall safety and accessibility for mass transit commuters walking to transit facilities. The state should increase funding for this program and encourage eligible municipalities to apply for available grant funds.

A New Ride for New Jersey

A New Ride for New Jersey



DEMOGRAPHIC
PATTERNS
HAVE CHANGED
DRAMATICALLY—
AND BUS ROUTES
HAVE NOT KEPT UP.

The New Jersey bus network is outdated, with routes that have not been significantly adjusted since NJ Transit was created in 1979 through state acquisition of private transit companies. While a few bus routes have been added or eliminated, most of the network remains the same since consolidation, with some routes even dating back to the streetcar era. Meanwhile, economic and demographic patterns have changed dramatically—and bus routes have not kept up. Most of the adjustments made by NJ Transit have been piecemeal, resulting in routes and an overall system that does not provide New Jersey commuters with frequent, convenient, or efficient service. New best practices have emerged in the intervening years, and reimagining the bus network would allow NJ Transit to ensure their buses operate as a reliable and desirable alternative to driving.

The 2016 Trans-Hudson Commuting Capacity Study emphasized the importance of a systemwide and multimodal approach when planning for current and future transportation patterns. 12 With the

Lincoln Tunnel and Port Authority Bus Terminal already operating at maximum capacity, it would be worthwhile for NJ Transit to take a fresh look at the bus network, especially as Port Authority moves forward with plans to redevelop the midtown terminal.

Meanwhile, even high-ridership routes need to be re-evaluated. International best practices recommend urban bus stops be spaced 1000 feet apart. However, New Jersey has a number of bus routes with stops located much closer together, slowing bus service and decreasing reliability. For example, 60 out of 70 bus stops along NJ Transit Bus #25 in Newark are within 1000 feet of another bus stop. In Camden, 39 out of 88 stops on NJ Transit Bus #404 are within 500 feet of another stop. Not only does this slow down buses, it also does very little to improve service coverage, as many of the coverage areas of the stops overlap.

The types of buses NJ Transit utilizes also highlight the antiquated nature of the system as a whole. Bus Rapid Transit (BRT) is becoming more commonplace across the country, but NJ Transit currently operates only two BRT routes. Additionally, by continuing to purchase diesel buses instead of fully electric buses, NJ Transit is locking itself into yesterday's technology and allowing the bus fleet to continue to pollute the air and contribute to climate change. Reimagining and modernizing the bus system includes reconsidering what the bus fleet itself looks like.



Reimagine the System

NJ Transit should follow the lead of cities like Houston, Seattle, and New York by redesigning the bus network, rather than continuing to make piecemeal changes to bus service. After implementing a network redesign, Houston and Seattle both showed a significant increase in bus ridership even while ridership around the country was decreasing. 14 Cutting down on overly redundant and unnecessary service in some areas while increasing service in high-demand areas will create a more reliable transit network at a relatively low cost. A redesigned bus network in New Jersey should encourage multimodal commuting by better coordinating bus and rail transfers, provide all-day frequent service on high-volume corridors, and have more evenly distributed bus stops that maximize coverage area.

Wherever conditions are appropriate, NJ Transit should implement Bus Rapid Transit (BRT), providing rail-quality service along corridors that NJ Transit's rail network underserves. In 2008 and 2009, NJ Transit launched its first BRT routes: Go Bus 25 and Go Bus 28. Implementing BRT features on these bus routes improved travel time by 7.6 percent and increased ridership.¹⁵ NJ Transit should build on this success and expand BRT service to more high-demand corridors throughout the state.

Deploy Electric Buses

As public transit agencies around the country undertake ambitious goals toward electrifying transit fleets, NJ Transit risks being left behind. NJ Transit should stop purchasing diesel buses and commit to an aggressive electrification schedule. At a minimum, NJ Transit should strive to follow the MTA's lead by committing to transitioning to a fully-electric bus fleet by 2040. Eventually, with more renewable energy infrastructure being built across the state, NJ Transit's bus system could operate entirely on green energy, which would save money and reduce the state's greenhouse gas emissions.

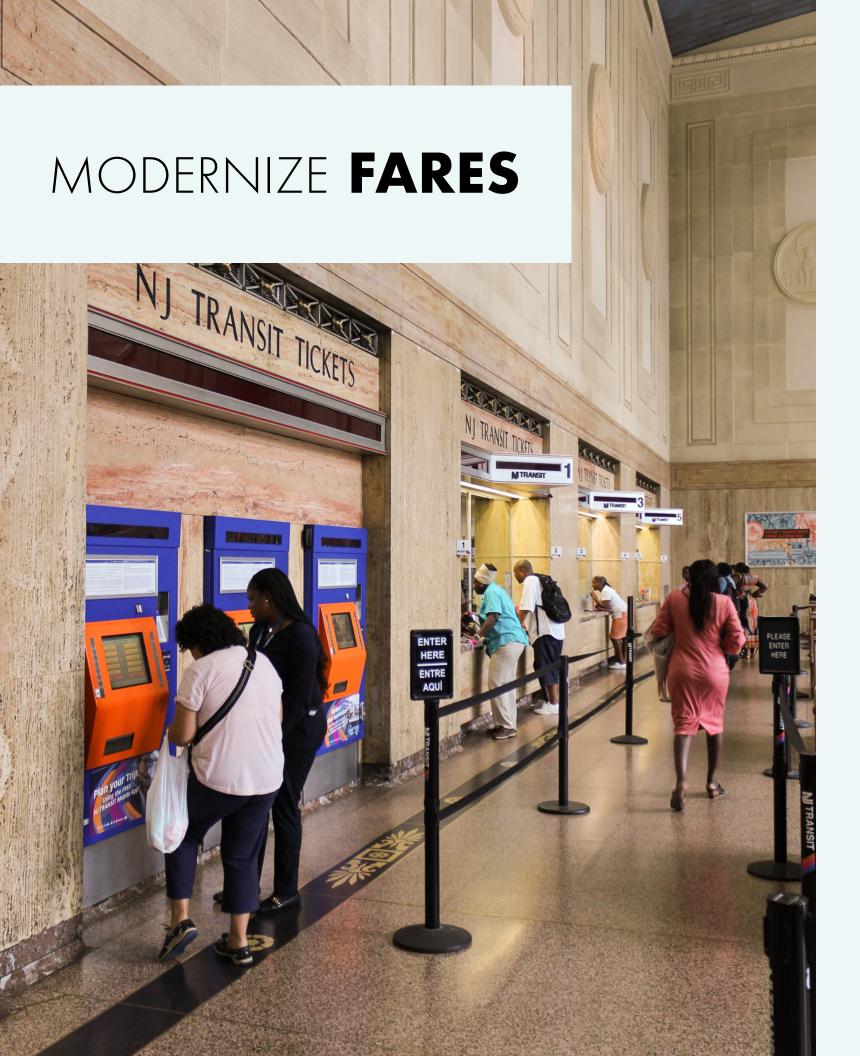
Meet John

John Boyle resides in Edgewater Park, NJ and works in Philadelphia. As a resident of southern New Jersey, John has witnessed the continuing decline of bus service in the area over the years. Since NJ Transit cut back service on bus #419, John now relies on the #409 bus, #417 bus, and the River Line light rail to commute to and from work. Occasionally, John's job requires him to work late, but he is unable to rely on NJ Transit for a ride home after 10 PM due to very limited service. John knows he's not the only one suffering, especially with the economic growth and new incoming businesses in the Camden area. "Camden is rising," John explained, "and we need better connectivity and better transit." With the lack of late-night transit options, he noted that "third shift workers are left in the cold." Beyond extended service hours, John believes that NJ Transit should acquire more funding to purchase cleaner electric buses because the current fleet "seems to be at the end of its life."





"WE NEED BETTER CONNECTIVITY AND BETTER TRANSIT."



NEW JERSEY BUSES USE AN ANTIQUATED FARE SYSTEM."

Bus fares should be easy to understand and paying the fare should be a simple process. However, New Jersey buses use an antiquated fare system both in structure and in payment method. The current system makes buses slow, unreliable, and confusing to ride, which in turn discourages some would-be bus riders from using the bus.

Currently, NJ Transit bus fares are designated by distance traveled through zones. These zones do not correlate with the zones used for NJ Transit's rail and light rail lines, creating a very complex fare structure. It is difficult for riders to know the fare prior to boarding, which slows the boarding process as passengers frequently ask bus drivers for fare information. This is especially true for those who are unfamiliar with the NJ Transit system or a particular bus route. While it is possible to buy a bus ticket via the MyTix feature in the NJ Transit app, the user experience needs an overhaul: the mobile app and website require detailed knowledge of origin and destination and include multiple steps before a user arrives at the "Buy" option.

For regular bus riders, ten-trip and monthly passes provide a convenient and sometimes discounted way of traveling. This convenience, however, only exists once the pass has been purchased: the process of choosing and then obtaining a pass are anything but simple. The website is difficult to navigate, and the fares page is especially long and complex. By requiring knowledge of fare zones when buying passes and separating the passes by transit mode, a rider's travel freedom and flexibility are strictly limited. This is also true of transfers; a rider is expected to know that a transfer ticket needs to be purchased when boarding the first bus, and how much that costs. None of this information is easily available.

This complicated payment system means riders may not be ready with their appropriate fare when boarding, and will need to spend time talking with the driver, figuring out their payment, and fumbling for exact change, which slows down the boarding process and causes delays. Buses cannot be a reliable alternative to cars if the first step of riding the bus—the boarding process—is slow, clunky, and complicated.

Farebox revenues are a major funding source for NJ Transit, but the cost of a fare should not be a barrier for those who need transit most. While a single fare may seem inexpensive, the cost can quickly add up for regular commuters, especially for students and low-income families. In some lower-income New Jersey neighborhoods, residents are spending on average half of their total income on transportation costs. Buses serve an important role in providing access to the many employment, housing, and education opportunities available in New Jersey and the metropolitan area, especially for those who don't have a car. When redesigning the fare structure, it is essential that the buses be affordable and accessible to all. Much like the successful "Fair Fares" campaign in New York City and "Orca Lift" in Seattle, NJ Transit should explore a discount for low-income riders.

MODERNIZE FARES RECOMMENDATIONS MODERNIZE FARES RECOMMENDATIONS

Modernize Fare Payments

Information on how to pay a bus fare should be made easily accessible on NJ Transit's mobile app (MyTix) and website. The MyTix app should be streamlined and updated to allow for easy, quick, and intuitive use.

NJ Transit should fully implement tap-and-go onboard fare payment on all buses, using reloadable passes that can be used across all NJ Transit services. Tap-and-go cards, especially with all-door boarding, drastically decrease time spent at a bus stop and help buses stay on schedule. The passes can be linked with the app to allow for easy refills and insurance against loss. Along with standard tap-and-go cards, NJ Transit should aim to eventually implement a system that allows for payment with bank cards equipped with near-field communications chips, Apple Pay, or a mobile wallet. Systems with this capacity already exist in Chicago, London, and New York City. This could include building from the pre-existing payment partnership with MasterCard.



The OMNY payment system was launched at select New York City subway stations in May 2019, allowing riders to pay using contactles bank cards and digital wallets

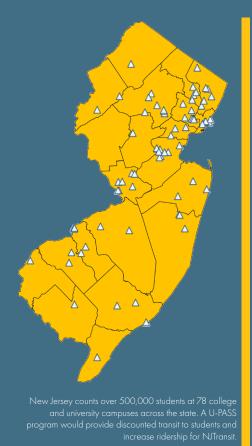
Modernize the Fare Structure

NJ Transit should commission a study that examines the feasibility of implementing a flat fare for intrastate (local) bus service, similar to Rhode Island Public Transit Authority (RIPTA), New York City Transit Authority (NYCTA), and King County Metro in Washington. Prior to 2018, King County Metro had one of the nation's most complex fare structures, with one zone for the City of Seattle and another for all areas outside of the city, as well as extra charges during the morning and evening commute. Metro adopted a \$2.75 flat fare after receiving more than 11,000 responses to two public surveys, including one in which 80 percent expressed support for a flat fare. The new fare structure is simple, makes riding transit more convenient, and avoids confusion over fare payment that leads to delays in boarding. A flat fare also provides a much-needed financial break to low-income people who have been priced out of living in the urban core due to the increasingly high cost of city housing. Furthermore, a flat fare for NJ Transit's intrastate (local) bus service will boost transit ridership and help New Jersey reach its goal to reduce greenhouse gas emissions. Interstate (express) buses that provide service to New York City and Philadelphia should continue to charge riders by distance traveled, since these routes provide a more premium service, making fewer stops and traveling longer distances.

NJ Transit should implement free transfers for bus riders and coordinate bus and rail fares to encourage multimodal commuting. For example, when a rider transfers from a cheaper local bus to a more expensive rail line, the rider would pay the difference in fares, effectively paying only for the rail trip and riding the local bus for free. When the rider transfers the other way, the local bus would be free. NJ Transit should also work with the MTA to expand free transfers between each agency's transit system, ultimately creating a more seamless commuting experience. As an example, a person taking public transit from Hackensack to The Bronx could only pay one fare, despite transferring from an NJ Transit bus to an MTA bus at the George Washington Bridge Bus Terminal. Transfer fees depress ridership, as public transit works best as an interlinked network, with one route connecting to another. Riders should not be penalized because their trip happens to involve a transfer.

Expand Discount Programs

NJ Transit should partner with universities to create a university-linked discount fare program (U-PASS program), which would provide deeply discounted transit passes to students, faculty, and staff. The existing discount program used by NJ Transit requires each student to apply through his or her university to receive a 25 percent discount on a monthly pass. The monthly pass is only valid between a specific origin and destination instead of unlimited access to the transit system. A U-PASS program would be beneficial to partner universities: providing public transit at a lower cost to students means more access to internships, jobs, and opportunities. NJ Transit would benefit from this arrangement because the program encourages students to get familiar with using public transit, which will shape attitudes toward transit and travel behavior years after graduation.¹⁷ One of the first U-PASS programs was started in 1991 at the University of Washington in conjunction with King County Metro. Since the program began, studies have shown a 38 percent decrease in drive-alone commuting, and the program now generates over \$7.5 million annually for King County Metro.18 With the success of this program, universities across the country have been partnering with transit agencies to provide students with unlimited rides through university-negotiated fare-bundling. In New Jersey, the university would bargain with NJ Transit for reduced fares and purchase passes for the entire student body in bulk, which students would then pay in their student-activity fee and through increasing the price of on-campus parking permits. With fare bundling, students get deeply discounted transit passes and NJ Transit will get guaranteed riders and fare revenue.



State elected officials and NJ Transit should work together to create a fare discount program for low-income New Jersey commuters, similar to the Fair Fares program recently implemented by the MTA in New York City. Transit agencies in Seattle, Minneapolis-St. Paul, San Francisco, and Portland, offer discounts of 50 percent or more on fares and passes for residents earning less than double the federal poverty level, living in public housing, or receiving SNAP benefits. NJ Transit should examine which model would work best in New Jersey to help low-income residents access jobs, healthy food, and other opportunities.

Implement Off-Board Payment & All-Door Boarding

The time buses sit at stops while passengers board, alight, and pay their fares (also known as dwell time) slows down service considerably: in New York City, buses spend an average of 22 percent of their runtime at stops,¹⁹ and in San Francisco, that number is 20 percent.²⁰ Transit agencies around the world have improved bus service by implementing off-board payment and all-door boarding. These features allow passengers to board and alight through all doors, reducing per-passenger boarding time and leading to a more even distribution of passengers throughout the bus.²¹ NJ Transit should implement these modern features on high-frequency bus routes to make bus service faster and more reliable.

A New Ride for New Jersey

A New Ride for New Jersey



NJ Transit cannot make valuable and targeted adjustments to service without high-quality data to inform the decision-making process. Unfortunately, NJ Transit's bus division lacks adequate means of data collection and archiving for a number of important metrics that are necessary for tracking service quality and reliability. Without robust performance data and analysis, NJ Transit cannot identify problem areas and implement solutions, such as bus-only lanes, queue jumps, bus stop rebalancing, and schedule adjustments, in places that need them most. Given that NJ Transit buses are equipped with GPS technology, some of this data already exists—but it is not being utilized to its full potential. For instance, the MyBus Now online portal allows riders to see when their next bus is coming, but there is no comprehensive archive of arrival data available for analyzing bus service.

Not only is data collection deficient, the metrics themselves need updating as well. For instance, the agency's primary metric for on-time performance, the current metric available to the public, records when a bus departs the terminal and does not track on-time performance for stops along the route. Furthermore, a bus is considered "on time" if it departs from its origin point up to five minutes and 59 seconds later than its scheduled time. This is a significant time gap, as buses will likely continue to fall behind schedule throughout the route due to traffic, dwelling at stops, and other factors. The result: even though NJ Transit reports that 90 percent of buses operate on time, bus service may still be unreliable for many riders.

"A BUS IS 'ON TIME'
IF IT DEPARTS
UP TO 5 MINUTES,
59 SECONDS LATE."

NJ Transit's 2017 Annual Report stated Automatic Passenger Counting software was being used to assess Timepoint Schedule Adherence, which uses GPS and farebox data to measure how close to the scheduled time a bus departs from specific stops all along its route.²² However, no summary statistics or further information are currently available to the public and the Federal Transit Administration found no evidence that they were in use as of September 2017.²³ Per that FTA report, problems with the data collection technology were cited by NJ Transit as the reason no other information was available, but this is not the only way to collect performance data. In a 2014 presentation on improving the bus system, NJ Transit reported Timepoint Schedule Adherence was at 68 percent, indicating there is data available.²⁴

This data needs to be easily accessible by the public to inform riders and improve agency transparency.

Despite having recently hired a customer advocate, NJ Transit does not have an official open data policy, and very little data is available to the public regarding NJ Transit operations and performance beyond high-level summaries in year-end reports. This opacity strains relationships with the public and potential allies.

Better Data Collection

Ample opportunities exist to improve NJ Transit's data collection and analysis. GPS trackers are already in use and can be extremely helpful in analyzing bus performance. NJ Transit is familiar with the many benefits of Automatic Passenger Counting, Automated Vehicle Location systems, and other data collection metrics available with Smart Bus technology, but this technology must collect and record data regularly and be made easily accessible to the public. For example, LA Metro uses Smart Bus technology to connect every bus in its fleet to an array of radio antenna sites throughout the Metro service area.²⁵ Some electronic fareboxes can be used to track passenger boardings at different locations as well and are used by a majority of Florida transit agencies.²⁶ As part of changes to the New Jersey bus network, NJ Transit must work to increase the reliability of these systems and, in the meantime, deploy manual counters to augment their data collection practices.

Improved Metrics

NJ Transit reports the on-time performance for its buses monthly. NJ Transit considers a bus "on time" if it departs from the terminal no later than six minutes after the scheduled time. Using this standard, however, allows frequently scheduled buses to bunch (operate too closely together) while still counting those buses as "on time". NJ Transit should follow peer agencies by defining "on time" as no earlier than one minute before and no later than five minutes after its scheduled departure time at each of its assessed (terminal or en route) time points. If the bus arrives outside of that range, it's considered either early or late. This is the standard currently used by MTA New York City Transit, Los Angeles Metro, Chicago Transit Authority, King County Metro in Seattle, Denver RTD, and TriMet in Portland. NJ Transit should collect on time data not only from the beginning and end of a bus route, but also at intermediate points along the bus route. Doing so will help the agency identify where bottlenecks occur throughout the network, laying the groundwork for targeted interventions such as dedicated bus lanes and transit signal priority. Committing to a tighter definition of on-time performance may make NJ Transit's metrics look worse than what they're currently reporting, but being honest about on-time performance will build trust with riders and develop a sense of urgency to confront the problem. Taking this step will make riders feel confident that the agency is working toward increasing bus service reliability.

Online Bus Performance Dashboard

Sufficient, comprehensive data and performance measures will allow NJ Transit, the state, and the public to better assess the current state of bus service. In March 2018, New York City Transit (NYCT) launched their Online Bus Performance Dashboard, which details customer-focused performance metrics for bus routes as part of the agency's strategy to improve service across the city's bus network. The dashboard gives riders and NYCT management a good idea of how existing service is performing and highlights areas that need improvement. This type of transparency and accountability is necessary to restore public faith in NJ Transit.

Implement a Comprehensive Open Data Policy

NJ Transit already has an open data platform called DepartureVision. The release of General Transit Feed Specification (GTFS) data nearly a decade ago has given riders better access to schedule information and service advisories. The agency and its riders would, however, greatly benefit if NJ Transit published GTFS real-time data. Although some clever developers have learned to scrape departure time data and parse it into machine-readable format, the technical prowess required to do so means that the vast majority of the data remains inaccessible and unarchived.²⁷ Archiving and making real time GTFS data available to the public would encourage developers to create apps that will help riders plan efficient trips, avoid delays, and stay up to date on real-time schedule changes.²⁸ The data is also crucial to advocates, researchers, and the agency for proper analysis of network performance and understanding the challenges the network faces.

Meet Sherry

Sherry Rollins is a lifelong resident of New Jersey and currently resides in Linden. For over 30 years, Sherry has relied on NJ Transit's bus network to travel around her community. Today, she regularly uses three local bus routes for commuting to church, choir practice, and places to shop. Sherry also takes NJ Transit to visit her mother and to serve as a volunteer for a local organization that assists blind people, but infrequent and unreliable bus service often makes her routine challenging. "I can't stand bus #57 because it runs every hour," Sherry explained. "The bus should run at least every 30 minutes" for it to be a more useful alternative to driving a car. Sherry would also like her city and NJ Transit to provide more shelters and amenities at bus stops. "The weather changes; sometimes it's warm, sometimes it rains. An umbrella can only do so much. NJ Transit has to step it up."





NJ TRANSIT HAS TO STEP IT UP."



THE AGENCY HAS
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CAPITAL FUNDS."

The biggest obstacle facing the implementation of robust improvements to NJ Transit's bus service is a lack of adequate funding. The agency has been deprived of operating dollars for years, leading to a multi-billion-dollar raid of capital funds under past state administrations. This practice began in 1990 with a \$90 million transfer from the agency's capital budget to the operating budget, growing substantially over the next 30 years to \$460 million in the Fiscal Year 2020 budget. These capital-to-operating transfers tie the agency's hands by reducing capital funding, stifling the agency's ability to engage in long-term planning and capacity expansion projects. Other transit agencies have rightfully decried this practice and made significant strides to reduce or eliminate transfers altogether. In contrast, NJ Transit has not developed a plan to wean off its practice of capital-to-operating transfers.

Furthering NJ Transit's funding challenges, none of the state's funding sources for agency operations reliably produce a consistent amount of revenue nor are strictly dedicated to the agency. The agency's operating budget comprises direct subsidies from the state and money that is diverted from the budget of the New Jersey Turnpike Authority (NJTA) and the Clean Energy Fund. Diversions from NJTA began in 2012 at \$110 million, ballooned to \$295 million in fiscal year 2013–2016, and dropped to \$154 million in fiscal year 2019. The current fiscal year 2020 proposal decreases this diversion to \$129 million. The Clean Energy Fund diversions began in fiscal year 2014 with \$23 million and has since steadily increased to \$82 million. The only current effort to bolster the operating budget has been a slight increase in direct state subsidy. This, however, is not a long-term solution, as it is neither sustainable nor reliable. Instead, direct subsidies keep the agency's funding at the mercy of the state's annual political budget process. As noted in the 2018 audit conducted by NorthHighland, unreliable funding for NJ Transit from year to year has made long-term strategic planning nearly impossible.

INCREASE FUNDING RECOMMENDATIONS INCREASE FUNDING RECOMMENDATIONS

Identify New Dedicated Funding Sources

As New Jersey rejoins the Regional Greenhouse Gas Initiative and continues to develop the Transportation and Climate Initiative in conjunction with partner states in the Northeast, legislators should dedicate a significant portion of revenues from those programs to NJ Transit. Both programs promise to raise millions annually. If the state is to meet its climate goals, it will need to focus on creating a virtuous cycle of increasing transit ridership, which requires investment in bus and rail infrastructure and operations to be successful.

State legislators should explore value capture programs on land around rail and major bus hubs. Such property has long been valuable to developers, who then build developments that rely on and expect good transit service. But NJ Transit sees no benefits when transit-adjacent projects are built; instead, the agency merely absorbs the increase in riders. It is only fair to ask developers to pay into NJ Transit on projects that are adjacent to, and rely on, transit for increased rents and sale prices.

Similarly, New Jersey should explore additional revenue options, including following the lead of states like New York, where a small tax on employers in transit-rich regions contributes to transit, or counties like Los Angeles County, which overwhelmingly approved two ballot measures to raise the sales tax to fund transit.

Develop Partnerships

Transit agencies across the country have created partnerships with public institutions and private companies to bolster ridership and promote services. In 2016, American University partnered with Washington Metropolitan Area Transit Authority (WMATA) to launch a pilot U-PASS program that was used by 90 percent of fulltime undergraduate students and generated \$2.7 million for the transit agency.29 With this partnership, the university bargains for reduced fare transit passes, which are then purchased in bulk for the entire student body, providing each student with unlimited access to transit. The program is paid for, in this case, by a \$130 mandatory student activity fee each semester. NJ Transit should partner with local colleges and universities to implement a U-PASS program to bolster ridership and provide a new reliable source of revenue. Similar programs can also be developed with state agencies and private employers.



NJ Transit has partnered with Peapod to install virtual grocery stores at train stations, where commuters could shop using the

NJ Transit should also partner with more private companies to provide revenue-generating rider amenities. In 2013, NJ Transit partnered with Peapod to install virtual store technology at select train stations.³⁰ Commuters with iPhones, iPads, or Android phones can shop by scanning the barcodes of products displayed on a digital billboard and schedule home deliveries for next day, or days or weeks in advance, during their train ride. Partnering with private companies like Amazon and other services that riders use can generate more revenue for NJ Transit and make the commuting experience more enjoyable for riders.



The Link at Aberdeen Station is a model of TOD development in New Jersey. (Image source: BNE Real Estate Group

Capitalize on Existing Assets

Transit-Oriented Development (TOD) is real estate development adjacent to transit hubs that focuses on increasing transit use, decreasing private vehicle use, and increasing transit revenues. NJ Transit should work with the state and municipalities to attract dense mixed-use development around bus and rail hubs, laying the foundation for a car-free lifestyle. Locating affordable housing and retail/commercial space close to transit hubs will help bolster NJ Transit ridership, generating more revenue for the agency. Working with Aberdeen Township and a private developer, NJ Transit opened The Link at Aberdeen Station in October 2018, serving as a model of TOD development in New Jersey.³¹ NJ Transit should continue to expand and improve on this model, especially in providing more affordable housing, throughout the state. Value capture, detailed above, is an important part of ensuring TOD benefits riders as well as developers.

NJ Transit owns numerous rights of way throughout the state that could potentially be leased out to private companies for shared use. For example, a commuter rail right of way can be capitalized on by sharing the space with a utility company, such as PSE&G.

When NJ Transit auctions off or sells parts from decommissioned buses, the money generated should go toward offsetting the cost of purchasing new fully-electric buses. This should be part of a larger strategy of transitioning NJ Transit's aging diesel bus fleet to new fully-electric buses that are more energy efficient, quieter to operate, and better for local air quality.

A New Ride for New Jersey

Increase Direct State Subsidy

New Jersey should establish a State Infrastructure Bank (SIB). Usually established and operated by a State office, such as NJDOT, a SIB is a fund that offers direct loans and credit enhancement products to support transportation infrastructure projects. This revolving fund grows its account balance through the monthly interest earned, repaid principal, and interest payments, supported by both state and federal funds through the federal SIB program and matching state contributions.³² Over half of the states in the country, but not New Jersey, have taken advantage of the federal SIB program, with many establishing their own versions on the state level.³³ In Texas, the State Infrastructure Bank is run by the Texas Department of Transportation, and provides funds for things like right-of-way acquisitions through loans of capital funds at or below market interest rates.³⁴ The South Carolina Transportation Infrastructure Bank focuses on large capital projects, including transportation facilities and economic development.³⁵ In many states, criteria for loans often require that projects increase quality of life and connectivity. Two bills have already been introduced in New Jersey this legislative session, A1917 and A1909, that would establish a Transportation Infrastructure Bank Fund. The successful passage and implementation of these or similar bills would help ensure necessary transit improvements can be made throughout New Jersey.

Retail leases at stations can offer direct funding as well. NJ Transit stations should offer more services beyond simple concessions, such as office space, mobile and temporary office space which could be leased on the fly, and services commuters might need, like grocery and delivery lockers, and dry cleaning. NJ Transit should also consider leasing space for corporate and private events.

The state should explore the use of employer-based business taxes that could generate revenue for NJ Transit. For example, in 2009, New York Governor David Paterson established an MTA payroll tax on employers within the MTA service area, helping to alleviate fare hikes and service cuts.³⁶ Taxes on gross receipts, corporate income, corporate franchise, business licenses, utilities, and the lottery/casino should also be considered as a means for a new dedicated funding stream.

Expand Revenue-Generating Marketing

Through both traditional and innovative revenue-generating methods, NJ Transit can bolster ridership and improve the agency's reputation. Installing digital advertising screens onboard buses and at bus stops, for example, gives NJ Transit the opportunity to use less space to generate more revenue from private companies looking to advertise between New York City and Philadelphia, two of the most sought-after markets in the country. These digital displays can also benefit riders by displaying service updates and promoting other NJ Transit services. In 2017, the MTA started rolling out digital ads throughout New York City's public transit system and announced plans earlier this year to add 53,000 more. The agency was guaranteed \$115 million last year from digital ads and expects to get \$117 million this year in its deal with Outfront, the company that installs and runs the screens under a 10-year contract.³⁷ On a broader scale, by wrapping bus exteriors with advertisements, NJ Transit buses themselves can become mobile billboards, providing companies an opportunity for more creative advertising.

Branding buses as an attractive alternative to cars is an ambitious goal for any transit agency, but it's especially ambitious in a place like New Jersey, where sprawl development has made the automobile feel like an essential part of life for many. NJ Transit should follow the lead of LA Metro by marketing its products and services as if it were a private company trying to turn a profit. Ten years ago, LA Metro launched a rebranding campaign, turning their dreary and dull buses into a colorful, eye-catching bus fleet that creates positive brand recognition while simultaneously promoting public transit. The campaign is cited as a key instrument in the success of Measure R, a ½ cent sales tax approved by Los Angeles voters that has generated billions of dollars in revenue for improving the city's transit services.³⁸ NJ Transit should develop a similar bus rebranding campaign to strengthen support for additional funding and long-term investment.

Meet Edwin

Edwin Ramirez was born and raised in Elizabeth, NJ and is a senior at Elizabeth High School. During the academic year, Edwin and his sister rely on NJ Transit every weekday to get to and from school. Unfortunately, traffic congestion on local roads often makes NJ Transit's bus service infrequent and unreliable. On some occasions, Edwin's bus has arrived over 30 minutes later than scheduled, which makes getting to class on time an unnecessarily stressful task. Edwin would like NJ Transit's buses to operate "more consistently with schedule times" and he believes that more frequent service would ease his commuting experience. As a regular bus rider, he also strongly urges the city and NJ Transit to provide "more [bus] shelters to





"GETTING TO **CLASS ON** TIME IS A **STRESSFUL** TASK."

conclusion

For too long, improvements to New Jersey's bus network have been an afterthought: the agency's beleaguered commuter rail system often comes first in priority, and both bus and rail are subject to draconian funding shortfalls that cripple the agency's ability to maintain a state of good repair, much less engage in expansion projects. But we can no longer afford the status quo: decades of mismanagement and chronic underfunding have put NJ Transit in a vicious circle of fare hikes, service cuts, and declining ridership.

Fortunately, dramatic improvements to bus service can be had for orders of magnitude less cost than new rail projects, meaning that even modest increases in funding can lead to substantial improvements to intrastate and cross-Hudson commutes. Many of the recommendations contained within this report come at relatively little cost to the agency, including improving the rider experience with more comprehensible mapping and fare payment technologies and better data collection and transparency practices. Other improvements, like street design and bus shelters, can be spearheaded by municipalities. While some recommendations, like fleet electrification, do require more significant financial outlays, these are often offset by efficiency gains elsewhere and can be amortized over several years, reducing direct, upfront costs to the agency. Further, such improvements do not have to come at the expense of rail: with sufficient dedicated and sustainable funding sources, NJ Transit commuters can have it all. It just takes political will in Trenton to act.

"WE CAN NO LONGER AFFORD THE STATUS QUO.

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TRI-STATE TRANSPORTATION CAMPAIGN

