

New Links Comprehensive Operations Analysis System Report September 2020

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New Links System Analysis Report, Vol. I - Regional Service Profile



Introduction and Project Overview

What is New Links?

New Links is a planning project to re-imagine how public transit connects Orleans, Jefferson, and St. Bernard parishes. The Regional Planning Commission (RPC) is working with the Regional Transit Authority (RTA), Jefferson Transit (JET) and Mayor's Office of Transportation to develop recommendations for redesigning the region's transit network to create more reliable, equitable, and connected bus and streetcar service.

The project involves two major components: a Comprehensive Operations Analysis of existing transit, and a planning process for a network redesign of the region's bus system.

What is a Comprehensive Operations Analysis?

A Comprehensive Operations Analysis (COA) is a system-wide analysis of a transit network that includes a detailed, line-by-line assessment of every transit route in a system. The RPC last completed a COA of RTA and JET service in May 2012.

What is a Network Redesign?

A network redesign is a transit planning process that begins by wiping the slate clean and starting from scratch. Working together, planners and the public can decide where, when, and how transit should serve a region. Many cities, including Houston, TX and Columbus, OH, have successfully grown ridership, improved frequency, and increased the reliability of transit service by reallocating existing resources.

What is the purpose of this report?

The purpose of this report is to provide information about the transit services operating in greater New Orleans and discuss some of the issues and trade-offs involved in improving transit service. This report mainly focuses on the operations of the two largest transit providers:

- The Regional Transit Authority (RTA), which operates 40+ bus, streetcar and ferry routes primarily in New Orleans and the City of Kenner, and:
- Jefferson Transit, (JET) which operates 11 bus routes in Jefferson Parish.

This report also includes information about St. Bernard Transit, which operates a single bus route in St. Bernard Parish that connects to RTA service in Arabi. These three agencies together operate almost all of the fixed-route (bus, streetcar and ferry) services in the Greater New Orleans region.





This report will particularly focus on these operators' bus lines, which represent the greatest opportunity to make short-term changes that improve the region's transit. Although this project also addresses changes that could benefit the streetcar network and the Algiers Point Ferry, most changes to those services would require investments by the transit agencies which will require additional funding and time. In the short term, transit agencies have much more flexibility to make changes to the bus network using existing resources.

The "Key Concepts and Choices" chapter of this report discusses some of the challenges and planning principles involved in creating better bus service.

The "System Evaluation" section of the System Report report examines how the geography of transportation in New Orleans creates both challenges and opportunities for planning bus service, and reviews the operational details and performance of the current system. This section also analyzes where and when people are using the current transit system, and makes some observations about where more service might be needed based on the ridership data.

The New Links team is also studying the market for transit in the region – who currently uses transit, what people need transit for, and the need for transit in different parts of greater New Orleans, which we will publish as a separate Market and Needs Assessment.

Finally, this report also contains some analysis and potential strategies for the RTA and JET to improve service for riders in addition to redesigning the bus network. These strategies are based on the ridership and operations data that Regional Planning Commission has collected, and the feedback we've collected from riders and other stakeholders as part of this project.

Why are we doing a bus redesign?

The bus and streetcar network serving greater New Orleans has not been rethought in a long time. The last significant change to the structure of the network was the introduction of the Canal Streetcar in 2004. At that time, the RTA and JET operated a broad and comprehensive transit network featuring significantly more geographic coverage and frequent service than the current system.

In 2005, Hurricane Katrina had drastic effects on the operations of both agencies, destroying much of the region's bus fleet and significantly reducing the operating budget of both agencies for running bus and streetcar service.

The last Comprehensive Operations Analysis of RTA and JET routes was done by the RPC in 2012. Although that study contained recommendations for redesigning regional bus service, those recommendations were not implemented.

Since 2012, the agencies (and particularly the RTA) have invested significant resources into both new bus and streetcar lines, and have added more service to existing lines. However, the broader network continues to resemble a scaled-down version of pre-Katrina service.

Here's how service has changed in the last few years.

Here is a summary of major changes and key trends in transit between the last major COA, conducted in in 2012, and the beginning of this project, in 2019.

The agencies - especially the RTA - have expanded service.

The RTA has added 4 new bus lines:

- The 65 Read-Crowder bus (2014)
- The 90 Carrollton bus (2014)
- The 106 Aurora bus (2014)
- The 202 Airport Express bus (2014)

The RTA has added the 49 Loyola-Rampart streetcar. The first phase (on Loyola) opened in 2013, the second (on Rampart) opened in 2016.

JET added one new bus line, the W6 Gretna Local, in 2015.

The RTA merged two bus lines (the 24 Napoleon and 28 MLK) to form the 28 MLK-Napoleon line in 2013.

The RTA significantly extended three bus lines:

- The 80 Desire-Louisa line was extended to serve downtown via Claiborne Avenue in 2014.
- The 32 Leonidas bus was extended down Orleans Avenue to serve Treme and the Central Business District in 2014.
- Most recently, the 39 Tulane line was extended to Causeway Boulevard in Jefferson Parish via Jefferson Highway to serve Ochsner Medical Center.

The RTA significantly increased late night and weekend service on many routes. Overnight service was added on the 39, 47, 52, 55, 84, 88, 94 and 114 (in 2016), and the 16 (in 2018).

The RTA has opened two new bus/streetcar transfer facilities: at Union Passenger Terminal (in 2013) and at Canal Boulevard and City Park (in 2018).

Changes to other major services have also affected the transit network.

In addition, there have been several major changes to transit services by other providers that have significantly affected the regional transit network.

Major changes to Ferry service in 2013

Before 2013, three ferry lines (carrying vehicles and pedestrians) served New Orleans and Jefferson Parish. In 2013, the state of Louisiana discontinued one of these lines, which connected Gretna and Downtown New Orleans. The RTA now operates the other two ferry services, with the Algiers Point-Canal Street ferry line running as a pedestrian-only ferry with reduced hours. The RTA's other ferry route, connecting lower Algiers to Chalmette, continues to carry vehicles and has few pedestrian passengers and limited connections to the rest of the transit network. RTA introduced a \$2 farefor pedestrians (pedestrian riders on both ferries previously traveled for free). The Algiers Point ferry maintained high pedestrian ridership prior to service interruptions in 2019, and serves as an important secondary link for transit riders traveling from the West bank to Downtown New Orleans. For this reason, this study will incorporate the Algiers Point Ferry into the service recommendations for a redesigned transit network.

Discontinuation of LA Swift Service in 2013

LA Swift started as an emergency commuter route between New Orleans and Baton Rouge after Hurricane Katrina, operated by LADOTD. LA Swift continued service until 2013 due to its popularity and high usage. The line averaged 12,000 passengers a month when it was discontinued due to lack of funding.

Figure 2 - Changes to RTA Service and Weekday Hours, 2012-2019



*As of March 2019, the Riverfront Streetcar is suspended, with the 47/48 Canal Streetcars providing service on the French Quarter portion of the line.

Key Trends, 2012-2019

Service has expanded, but ridership has not.

Since 2012, the transit service has expanded, and the RTA and JET combined run more service per capita than they did in 2012. The RTA in particular has invested significantly in service. However, these investments have had mixed results.

Productivity and ridership on RTA bus routes have been declining since 2013. Although the RTA has been increasing service, ridership has been in decline on both bus and streetcar routes.Figure 5 compares annual ridership and service run by each agency from 2011-2018. Despite offering more service, the system as a whole has only slightly more riders than it did in 2012, and has generally been flat since 2013.

Although this report is not primarily focused on the market for transit, it is worth emphasizing that demographic trends do not indicate that there is decreasing need for transit. From 2012-2018, the number of zero-and one-car households in Orleans and Jefferson Parish has increased both overall and as a share of the region's population.





Figure 3 - % Change in Service Levels for RTA and JET lines, 2012-2018. (Source: 2012-2018 National Transit Database)

While JET service levels have mostly remained flat, the RTA operates 118,262 additional revenue hours of bus service and 76,380 revenue hours of streetcar service annually vs. 2012.





Figure 4 - % Change in Annual Ridership, 2012-2018 (Source: 2012-2018 National Transit Database; Agency data for RTA Service)

Nearly all ridership growth since 2012 can be attributed to increased streetcar ridership. System-wide ridership peaked in 2014 and has declined slightly from 2014-2018.

Figure 5 - % Change in Service Productivity, 2012-2018 (Source: 2012-2018 National Transit Database; Agency data for RTA Service)

The productivity of all service has declined since 2012 meaning that fewer riders are traveling on bus and streetcar lines relative to the amount of service being run. These declines are stronger for RTA service.

The agencies have not prioritized frequency.

Table X compares service frequency on different routes in 2005, 2011 and 2019. This table uses a color scheme that will appear throughout this report to highlight routes by how often bus and streetcar service come:

How long until the next bus comes?

15 minutes or fewer
16-20 minutes
21-30 minutes
31 minutes or more

Some figures in this report will use slightly different time brackets, but the basic story is essentially the same.

Even as the RTA has added several new services and expanded late-night offerings on many routes, daytime frequency on most of the system has barely changed.

Figure 6 - Base and Peak Frequency on RTA and JET Lines, 2005-2019

		2005		2012		2019	
		Peak	Base	Peak	Base	Peak	Base
5	Marigny/Bywater	15	23	45	45	40	40
10	Tchoupitoulas	30	60	30	60	45	45
11	Magazine	8	16	16	20	19	20
12	St. Charles Streetcar	6	8	9	8	9	9
15	Freret	14	22	35	60	34	60
16	Claiborne	9	21	30	60	37	29
27	Louisiana	9	25	30	40	34	45
24	Napoleon*	13	30	30	30	45	45
28	M. L. King*	11	21	45	45	45	45
32	Leonidas	13	36	70	70	45	53
39	Tulane	7	12	20	30	15	30
45	Lakeview	21	50	30	30	90	45
4748	Canal Streetcar	6	10	11	11	9	9
5152	St. Bernard	5	14	25	25	21	19
55	Elysian Fields	11	17	38	35	38	35
57	Franklin	11	20	35	35	30	45
60	Hayne	12	76	60	60	60	60
62	Morrison Express	13	25	30	45	30	33
64	Lake Forest Express	7	19	45	90	29	60
65	Read-Crowder					33	55
8o	Louisa	16	23	70	70	60	55
84	Galvez	9	20	40	40	45	45
88	St. Claude	7	11	20	20	16	21
90	Carrollton	21	60			35	70
91	Jackson - Esplanade	17	28	30	30	30	30
94	Broad	6	12	20	20	16	19
101	Algiers Loop	31	30	60	60	75	55
102	General Meyer	15	35	35	35	48	38
106	Aurora Express	18				80	
108	Algiers Local	30	60	60	60	60	53
114115	General DeGaulle	8	20	23	20	26	23
201	Kenner Loop	48	48	53	50	55	43
202	Airport/Kenner Express	15				90	60
E1	Veterans	14	23	24	30	25	29
E2	Airport	14	25	28	35	31	38
E3	Kenner Local	18	27	23	30	26	30
E4	Metairie Road	20	40	40	40	40	40
E5	Causeway	30	60	30	60	30	60
E8	Clearview	30	60	70	70	75	75
Wı	Avondale	65	65	70	70	75	75
W2	Westbank Expressway	23	30	33	60	38	55
W ₃	Lapalco	23	30	30	40	45	45
W6	Gretna Local	76	76			30	30
W8	Terrytown	27	52	30	60	43	60
W10	Huey P. Long	43	80	75	75	90	90

^{*}The 24 Napoleon and 28 Martin Luther King RTA lines were merged into a single bus line (the 28 MLK-Napoleon) in 2013.

What key questions need answering?

What are our goals, and who are we trying to serve?

New Orleans visitors make up a significant part of transit ridership. More than 25% of weekday RTA, JET and SBURT riders were visitors to the region, according to data collected by the RPC.

The RTA Streetcar lines in particular are a major tourist attraction in their own right. The St. Charles streetcar lines is one of the oldest transit services in the world, and was designated as a National Historic Landmark in 2014. The RTA's other streetcar lines were built with rolling stock resembling 19th-century heritage streetcars.

Operating heritage streetcar service has trade-offs, however, for the simple reason that heritage and replica heritage streetcars are slower and more expensive to run than modern bus or light rail service. The St. Charles streetcar is also not ADA accessible creating equity issues in serving local residents.

More broadly, the local transit agencies face trade-offs in allocating service for visitors and residents. How best to balance service for visitors and for residents.

More Coverage or Better Access?

Transit agencies face two major priorities when deciding how to structure bus service:

- 1. "As many people as possible should be within walking distance of bus service."
- 2. "Transit should get people to their destinations quickly."

These two goals are fundamentally in conflict. Because resources are limited, it simply isn't possible to run enough service to fully address both of these goals, and every transit agency must decide how to allocate service between these priorities.

How late should service run?

Relative to many agencies of its size, the RTA runs at least some overnight service on many routes. With some exceptions, non-overnight RTA routes stop running between 10pm and midnight. However, there is no overnight service on JET routes, and most service ends between 6pm and 10pm. This creates a mismatch between RTA and JET service.

From the perspective of distributing limited service hours this is understandable: most people's travel needs take place during the daytime. However, a large number of workers that are critical to the local economy, many of whom rely on public transit, work non-traditional hours, and their transportation needs are poorly served when public transit doesn't run overnight. Those in the hospitality or healthcare industries may find themselves stranded when their shift begins or ends after midnight or in predawn hours when their bus is not in service.

Late night service is also useful for building daytime ridership, because riders are more comfortable starting trips into town in the afternoon and evening when they know they will still be able to get home on a late-night bus.

How best to balance daytime and overnight service is a trade-off. It is a decision to make both system-wide and on a route-to-route, neighborhood to neighborhood basis.

What changes are people willing to make for better service?

Because the network has evolved over time, and because different lines are operated by different agencies, the current transit network is not set up as efficiently as it could be. On some corridors, multiple bus lines run duplicating service so that riders have a one seat trip. In parts of Orleans Parish, several bus lines may run parallel to each other only a few blocks apart and serving the same destination, which makes each line less efficient overall.

The transit agencies can make the system more efficient (which would allow them to run more service) by redesigning bus lines to act as a single network using the resources of both major agencies. However, getting the most out of the system may require significant changes, which would affect how riders would travel around the city on a day-to-day basis. Riders' willingness to accept those kinds of big changes is important for determining how ambitious a bus network redesign plan should be.

What is the commitment of stakeholders to invest in transit infrastructure?

New Orleans currently lags behind many cities in investments in dedicated roadway space for buses. There is currently only one dedicated set of bus lines in the region (on Basin Street adjacent to Canal Street).

Small chokepoints can have a big impact in transit planning, and allocating dedicated space for buses in high leverage locations such as downtown could have big benefits for the entire transit network. However, this will require Orleans and Jefferson parish to allocate road space for bus movement in a way that they have not previously.

Recent crises have introduced new challenges for service planning

The new links project kicked off in January 2019, and the majority of the system analysis was done using data collected in the March 2019. Since then, several significant crises have had important effects on the regional transit network, and the planning environment for transit service has changed

In October 2019, the under-construction Hard Rock Hotel site at Rampart St. and Canal St. collapsed, directly atop the intersection of the Canal and Rampart streetcar lines, and adjacent to the city's central bus hub at Elks Place. This event forced emergency relocation of the city's main transit hub to a new site at Duncan Plaza, along with the rerouting of several streetcar lines to account for the partially severed streetcar network.

Beginning in the summer of 2019, the ferries used to operate the Canal-Algiers Point ferry line began to experience significant mechanical issues, which culminated in the temporary suspension of service on this route for several months in late 2019.

At the time of publication for this report, Orleans and Jefferson Parish are in the beginning stages of reopening after the COVID-19 lockdown, which has had profound effects on the life and economy of the city.

In some ways, the COVID-19 crisis has added significant uncertainty to the planning environment for transportation generally and for New Links particularly. At this point, we don't even know yet what a timeline for a return to normal looks like. Realistically, the post COVID-19 region will have new and different transportation needs in ways that we are only beginning to fully grasp. It is difficult not to recall previous disasters such as Hurricane Katrina which drastically reshaped both the availability of transit resources and the city's transportation needs.

System Updates

The majority of systems analysis was performed in March, 2019. However, there have been significant changes to bus, streetcar, and ferry service since this project began. In cases where changes have been made that are relevant to the project analysis, we will highlight those changes with a sidebar.

In other ways, the crisis has reinforced the essential role that transit provides for many residents who would not otherwise have access to essential services, and throughout the lockdown riders have continued to rely on transit service to travel to hospitals, grocery stores, and other critical needs.

Moving forward in the planning process, the New Links team will continue to work with the RTA and Jefferson Transit to assess emerging transportation needs as the country reopens, to ensure that the network plan that we develop as part of this project is consistent with the present needs of the region. This page intentionally left blank.



Key Concepts and Choices

Key transit planning concepts

Consider the RTA system map on the right.

A bus map is a general illustration of where service goes. However, most transit maps (including the RTA's and JET's) missing critical information whick would be important to a person using the bus network:

Where are the stops located? While many RTA and JET lines have stops located every several blocks, several operate as express services, and may run several miles without stopping. For example, the 202 Airport bus makes only a handful of stops between leaving the CBD and arriving at the Airport in Kenner.

How late does the bus run? At a glance, transit maps typically do not provide information on when services are actually running. Two of the lines on the RTA map, the 100 and the 63, are "Owl" services that only run when other bus lines are not operating. The WSL line runs only on Sundays. Several RTA and JET lines do not run on weekends. Critically, at no point in the day are all of the lines shown on this map running at once.

When is the next bus coming? Perhaps most importantly, a typical transit map does not illustrate frequency. Without additional information, such as a timetable, it is impossible to know whether a bus might come once an hour, or once every 10 minutes.

Transit planner Jarrett Walker coined the term "motorist's error" to refer to conceptions about transit that arise from "unconsciously thinking about transit as though it works just like cars and roads."

A key issue with transit maps generally is that they visually emphasize one particular aspect of transit service – where the routes are – that is more important for other modes of transportation such as driving and biking. However, they leave out important information that helps riders determine how long it will actually take to get to their destination.



Updated 6-9-2019



Figure 7 - Regional transit network, Spring 2019

Access

People typically use vehicle transportation (cars, bikes, taxis, transit, and so on) because it allows us to get farther than we could by walking in a given amount of time. To be useful to riders, transit needs to be set up to allow people to make the trips they want to make in a reasonable amount of time.

Right now, on weekdays, trips on transit in New Orleans and Jefferson Parish typically take much longer than trips taken in a car. While a typical resident can reach 89% of jobs in Orleans Parish in under 30 minutes by driving a car, they can only reach 12% of jobs taking transit.¹

This creates both a ridership issue and an equity issue:

- Limited access creates a ridership issue because it makes transit a less competitive travel option. people will avoid taking the bus if they have other travel options.
- Limited access creates an equity issue, because people who rely on transit have access to fewer jobs and other destinations. Those using transit have a significant time penalty attached to the trips that they make.

A good way to visualize access is by showing how far a person is able to travel using the the transit network from a certainplace at a given time of day. These kinds of maps are called isochrones, and they are a useful way of showing how useful the transit network is generally and in different parts of the city.

Figure 8 - Average trip time to work by travel mode in Orleans Parish.



SOURCE: CENSUS BUREAU, 2014-2018 ACS

RIDE New Orleans Analysis, 2019.



Figure 9 - Transit + Walking Access from New Orleans CBD (Spring 2019)

The map above shows an estimate of how many areas of Orleans and Jefferson Parish are accessible by transit + walking from the core of the CBD within 60 minutes on a typical weekday. The current system is set up so that most bus in streetcar lines serve the CBD, so access to downtown is (relatively) strong compared to many parts of Orleans and Jefferson Parishes. Nevertheless, few residents of New Orleans East or the East Bank of Jefferson Parish have all-day access to the CBD.



Figure 10 - Transit + Walking Access from Lakeside Shopping Center (Spring 2019)

The map above shows daytime access to Lakeside Shopping Center, which forms part of the "Metairie CBD" employment cluster along Causeway Blvd. The Metairie CBD and Elmwood are (respectively) the second and third largest job centers in the region, but fewer residents have fast all-day access to these jobs.



Figure 11 - Transit + Walking Access from Algiers Regional Library (Spring 2019)

The map above shows daytime access from Algiers (at Gen. de Gaulle Dr. and Holiday Dr.) within 60 minutes on a typical weekday. Because there are limited connections between the Orleans and Jefferson Parish transit systems on the West Bank, Algiers residents have limited access to destinations in Gretna and other parts of the West Bank of Jefferson Parish.

Frequency

Frequency refers to how often transit service comes – in rider terms, the time until the next bus arrives.

Although many factors affect how useful transit is to riders, including service speeds, reliability, route design, and coverage, frequency is the most important, and has a close relationship with how many people use transit service. The idea of frequency doesn't really have an equivalent for driving, biking, or walking trips, and it may be counterintuitive to non-transit riders why frequency is so important.

However, the reason is fairly simple: wait times are part of a bus rider's trip, too - often the biggest part.

Consider the example of a rider taking the bus to and from work. The actual bus trip takes 25 minutes, and the bus stops at their work place once an hour, on the hour. They are responsible for closing up shop, so that worker leaves for home a few minutes after 5:00pm. This trip is shown in the "60 minute frequency" diagram on the right. Travel time example
60 minute frequency \bigcirc 55 minute wait + 25 minute ride = 80 minute trip5:05PM5:05PM5:05PM5:05PM5:05PM5:05PM5:05PM5:05PM6:00PM6:00PM6:25PM





Figure 13 - Travel Time Example - 30 minute frequency





In this scenario, that worker has pretty bad luck: they get to the stop right after the bus leaves, and the next bus doesn't come until 6:00pm. That person's actual trip home takes well over an hour, even though they only spend 25 minutes on the bus.

For certain types of trips (such as shopping), frequency matters a bit less, because riders can time their trips around when service is available. However, for any trip that requires a rider to arrive or leave at a certain time, frequency matters a lot.²

The remaining three diagrams show the same example trip as described above, but with service coming every 30, 20 and 15 minutes hourly, which change the worker's travel time dramatically, with the last example cutting the trip to a much more tolerable 35 minutes. The generalized relationship between travel times and frequency is shown on the next page.



² When thinking about this example, it helps to imagine not just the wait time but the actual experience of waiting at a bus stop: a significant number of stops in Orleans and Jefferson parish lack shelters, seating, or lighting for riders.

As a practical matter, bus riders are unlikely to to wait an hour for the bus every day if they have other travel options, which is one of the major reasons that the frequency is closely associated with productivity: how many passengers use service relative to how much service costs to run.

Frequency also offers other benefits to riders:

 Resiliency: frequent bus services are more resilient to disruption and delays than low-frequency services, because if one bus breaks down or is late, riders can reasonably expect the next bus to be there soon. Likewise, riders are less at risk of missing a connection when transferring between two highfrequency services, because they have the option of catching the next bus. For this reason, traditional measures of reliability are less



Figure 16 - Wait times by service frequency

important when service runs frequently enough.

- Flexibility: frequent service throughout the day offer riders the flexibility of traveling when they need to, rather than planning their trips around a timetable. This added flexibility generates additional ridership, as people will take bus trips they might otherwise have not. As service becomes more frequent, timetables themselves become less important if riders can expect a bus to arrive after a short wait, which is why some transit agencies don't produce traditional timetables at all for high-frequency service.³
- Easier transfers: for trips requiring transfers, the relationship between frequency and trip times is even stronger, because riders must repeat the wait cycle each time they board another bus.

A number of studies by individual transit agencies have shown a strong cause-and-effect relationship between increased frequency and higher ridership,⁴ which is one of the reasons that many recent bus network redesigns projects, such as those in Houston, TX; Columbus, OH; and Richmond, VA have made increasing the number of high-frequency lines a core focus.

Many agencies now define and map "high-frequency networks" of bus service, and the RTA has committed in its 2018 Strategic Mobility Plan to creating a branded network of frequent routes by 2022.

³ Including the RTA, which prints frequencies instead of timetables for maps of the streetcar system.

⁴ See, for example, a 2017 Transit Ridership Growth Study by the Chicago Metropolican Agency for Planning evaluating changes to Chicago-area transit service: https://www.cmap.illinois.gov/documents/10180/0/Transit+Ridership+Growth+Study_final.pdf, and a 2017 Utah Department of Transportation study of 157 transit systems in the US on the relative importance of Coverage vs. Frequency: http://mrc.cap. utah.edu/wp-content/uploads/sites/8/2015/12/Coverage-vs-Frequency.pdf

What counts as frequent service?

There is no specific, empirical threshold at which service becomes frequent, and transit agencies creating high-frequency networks have different standards for measuring frequency, but a common definition is "service that comes at least every 15 minutes throughout the day." This is the definition of "frequent service" used in both the RTA's Strategic Mobility Plan and the New Links System Report.

Do RTA and JET riders care about frequency?

Yes. Both riders and non-riders have consistently highlighted frequency as a major priority during both the RTA and JET strategic planning processes, and in the community outreach that the New Links team has done for this project.

As part of the RTA's 2018 Strategic Mobility Plan, riders were asked what strategies the RTA should prioritize for improving service, with both riders and non-riders picking "fast, frequent service" as a top preference. The final SMP, which the RTA board adopted in 2017, emphasizes the importance of improving frequency to the RTA's service improvement plans over the next few years.

During the first phase of New Links outreach (in the summer of 2019), riders were asked to prioritize several different potential service improvements, with frequency highlighted it was the top choice of both riders and non-riders.



The city of Houston redesigned its bus network with an emphasis on increasing the number of frequent, all-day routes, shown in red. By doing so, Houston was able to increase ridership by reallocating its existing resources.

Span

Span refers to when service is running. Late-night and weekend service, when scheduled properly, is relatively cheap to run for a transit agency. Because there is little traffic and fewer riders, buses can travel faster, so agencies don't need to run as many buses to keep service running at a given frequency. Late night service also builds daytime ridership by giving workers the flexibility of changing their hours, and accommodating the schedules second-shift workers who need a means to get home late in the evening.

Do RTA and JET riders care about span?

Improving late night and weekend service is particularly important to Jefferson Parish transit riders, who listed it as their highest priority during outreach for the 2019 JET strategic plan.

This makes sense: while the RTA currently runs a significant amount of late-night service and most routes run at seven days a week, Jefferson transit routes stop running earlier, and only four of JET's 12 bus lines run seven days a week.

RTA riders - particularly in New Orleans East and Algiers - have also asked the RTA to improve late night service options, and the RTA has committed to exploring late night service options in the SMP.

Speed

Speed is important for quality transit service, although for different reasons than speed is important when traveling by car.

Speed plays a role in how fast people get to their destination but is typically less important than frequency to a person's overall trip time. However, speed has other important effects on the success of a transit system.

Corridor speeds and congestion have significant effects on how often buses are on time, and low-speed corridors can prevent agencies from running reliable service. Speed also relates to the amount of service agencies can run. Because agencies pay for the time it takes to run service, increased bus speeds directly translate to savings for an agency. On corridors with high enough service frequencies, increasing service speeds allows agencies to provide the same level of service with a smaller number of buses, potentially allowing them to add service elsewhere. Unlike most other improvements to transit – which require more resources – speed allows transit agencies to save money.

Better service for the same budget:

Transit can potentially serve many functions, and decisions about where to put service and how much service to run require communities to make decisions about what purposes transit should serve. However, there are a number of "best practices" strategies available to transit planners to make service more efficient and improve the rider experience that can potentially be applied to a wide range of transit system

Route design (directness and linearity)

Route design refers to the actual structure of bus and streetcar lines. Ideally, bus routes would be designed to be as linear as possible: that is, they would travel in straight lines from destination to destination, much as a person would do making a trip by car.

When a bus route makes a detour from a linear path to serve a particular destination, it is making a deviation. Deviations are inconvenient for any riders traveling on the straight path, because the deviation is adding travel time to their trip.

In practice, the directness of routes is determined in large part by land use, road network factors, and whether key destinations are a reasonable walking distance from a corridor being served by transit. In some cases, the importance of a destination outweighs the inconvenience added to other trips by serving it. All other things being equal, however, more linear routes are more likely to generate greater ridership.

Scheduling

Incorporating best practices into scheduling is an important tool for increasing the convenience of transit, particularly on low-frequency bus networks. Effective scheduling can be used to create opportunities for timed transfers between different bus lines, where buses are scheduled to connect at the same location for a few minutes so that passengers can transfer from one bus to another.

Clockface frequency (or clockface headways) refers to the practice of scheduling buses so that they arrive at the same time every hour (every 5, 10, 15, 20, 30 or 60 minutes). Clockface headways serve two purposes: first, they make transit more legible and easier to remember for riders. If a bus is arriving at the same time every hour, riders do not need to consult a timetable every time they are going to make a trip. Second, clockface headways make scheduling timed transfers easier, by making it possible to arrange for multiple lines to connect to the same location every hour.

Key Concepts and Choices

Layover

Transfer window

Figure 17 - Transfer Diagram: 108 Algiers Local to Algiers Point Ferry





Figure 18 - Transfer Diagram: E1 Veterans to 47 Canal Streetcar

The Canal-Algiers Ferry and 108 Algiers Local bus connect at the Algiers Point ferry terminal. They are scheduled to create a timed transfer opportunity for riders every hour, shown on the left.

The 47 Canal Streetcar and E1 Veterans Bus connect at Cemeteries Transit Center, shown on the right. Because the schedules for these two lines are not coordinated, this connection is not timed to allow riders to transfer between the two lines.

Transfers

Building bus networks around transfer hubs make service more efficient, because it's more effective to connect many services to a central location than to run individual bus lines to every key destination. This works in the same way as most passenger airlines structure their service: rather than run nonstop flights to each city, airlines connect most cities to a central hub from which passengers transfer to complete their trip.

It is important to recognize that each transfer adds some level of inconvenience to a rider's trip: airlines realize that given the choice, most people would prefer to have a direct flight then make a transfer, which is why they price their services accordingly: nonstop flights more convenient, but flights with a layover are generally cheaper. Unfortunately, the fare structures for transit have historically been set up the opposite way: many US transit agencies, including the RTA and JET, add a surcharge to passenger trips involving a transfer.

Riders are typically much more willing to make transfers when timetables are set up so that transferring is convenient and wait times are short.

One way of doing this is by scheduling service so that different lines connect at the same place at the same time, allowing riders to transfer conveniently from each line to the other. When many lines come together to create a timed connection at one location (often downtown), it's called a pulse. Timed transfers rely on smart, efficient, and coordinated scheduling. A significant disadvantage of timed transfers is that they depend on consistent, reliable service. Late buses cause time to transfer networks to break down, sometimes catastrophically, if a rider misses a transfer window and has 30 or 60 minutes added to their trip. For this reason, reliability is particularly important for low-frequency transit networks.

An alternative approach is to run lines frequently enough that wait times for buses are always short. When service comes frequently enough, scheduling timed transfers is less necessary, because riders will have a short wait regardless. This page intentionally left blank.



System Analysis

Overview

This chapter focuses on the key features and performance of the existing transit network – specifically, the operations of:

- The Regional Transit Authority (RTA), which operates 40+ bus, streetcar and ferry routes primarily in New Orleans and the City of Kenner, and:
- Jefferson Transit, (JET) which operates 11 bus routes in Jefferson Parish, and
- St. Bernard Urban Rapid Transit (SBURT), which operates a single bus route in St. Bernard Parish that connects to RTA service in Arabi.

This chapter will include information both about the overall system, and route-by-route comparisons between RTA and JET Bus and Streetcar routes. Due to their unique operating characteristics, the Algiers Ferry and SBURT are addressed in a separate section of this report.

Transit and the built environment

Street network characteristics

Land use and transit propensity are the focus of a separate report but understanding the structure of the street network is important for understanding how people access transit, and some of transportation geography factors that influence the design of the network. Key points:

- The core of New Orleans has a very welldeveloped street grid, which means walkability is strong in much of the city. The grid follows the river, which gives the network some radial characteristics: many roads running perpendicular to the Mississippi River will eventually meet.
- Areas of metro New Orleans developed from the early 1900s onwards – Lakeview, Lake Shore, Pontchartrain Park, New Orleans East, much of Algiers, most of Jefferson Parish – have a significantly less-developed street grid – network connectivity is poorer and it's harder to walk places.
- Of unique importance in the New Orleans region – there are many uncovered drainage canals that are barriers to pedestrian access. These are frequent in Jefferson Parish, Algiers and New Orleans East. Some of these canals run adjacent to or in the medians of key corridors such as Morrison Blvd. and Veterans, creating barriers to walkability on those corridors.

Geographic bottlenecks

The Mississippi river and the region's three largest canals (the Industrial Canal, Intracoastal Waterway, and Harvey Canal) have a significant role in shaping the transit geography of New Orleans, which is why planners and stakeholders often speak of New Orleans East, the Lower 9th Ward (along with St. Bernard Parish), and the West Bank as being high-priority markets for better transit service.



Figure 19 - Key transit geographies in Greater New Orleans

System Analysis



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The Network

The existing network is shown on the left. Lines are color-coded using the following color scheme:

How long until the next bus comes?



Regional service in New Orleans is highly radial. 37 of 51 RTA and JET routes connect to downtown, and More than 80 percent of RTA and JET trips (1,258/1541) run through downtown.

Key services in the system include:

Routes 47 and 48, the Canal Streetcar, connect Mid City residents to downtown via Canal St.. Route 47 travels the entire length of Canal St. between City Park Ave. and the Mississippi River, connecting to other RTA and JET routes at Cemeteries Transit Center. Route 48, the Carrollton branch, connects to City Park Ave. at Esplanade Ave. via S. Carrollton Ave. Taken together, the 47 and 48 have the highest weekday ridership of any RTA route.

Route 12, the St. Charles Streetcar, is the RTA's highest frequency and second highest-ridership ridership route. The St. Charles Streetcar connects uptown neighborhoods to the CBD via St. Charles Ave., and it connects to additional RTA and JET services at its outbound terminus at S. Carrollton Ave. and S. Claiborne Ave.

Route 94, the Broad bus, which serves the New Orleans East, Gentilly, Mid City, and Broadmoor neighborhoods,

Route 39, the Tulane bus, which serves residential areas of S. Carrollton as well as the CBD, and connects to medical hubs at University Medical Center and Ochsner Medical Center,

Route 88, the St. Claude bus, which connects the Lower 9th Ward and Bywater neighborhoods to downtown,

System Analysis



Figure 21 - Existing Transit Network (Downtown routes), March 2019

Route 62, the Morrison express, connecting the residential Morrison Blvd corridor of New Orleans East to downtown via I-10,

Routes 114/115, the General de Gaulle bus, which serve the Aurora Gardens and Garden Oaks neighborhoods of Algiers, and connect to downtown via the Crescent City Connection,

Route E1, the Veterans bus, which has the highest ridership of any Jefferson Transit route. The E1 serves the Veterans corridor in Metairie and connects to the Canal streetcar at Cemeteries Transit Center,

Route 91, the Jackson-Esplanade bus, serving residents of Mid City, Treme and the Lower Garden District, and connecting to Downtown, Delgado Community College, and Cemeteries Transit Center.

The lines above account for more than 60% of the system's weekday ridership as of March 2019.

The RTA runs two peak-only routes (lines 202 and 106), and two owl routes (lines 63 and 100), and JET runs one Sunday-only service, the Westbank Sunday Loop, which are not shown on this map.

Downtown Service

This map shows downtown service as of March 2019.

Prior to October 2019, the core transfer hub for most RTA and JET services was the complex of stops between Canal St. and Tulane Ave. on Loyola Ave./Elk Place and Rampart St. Not all services connected here, and lines 5, 10, 11, 16, and 55 connect to the Canal streetcar at a cluster of stops near Canal St. and Magazine St.

The St. Charles Streetcar runs in mixed traffic past Howard Ave., inbound on Carondelet St. and outbound on St. Charles Ave.. These corridors are frequently congested and the streetcar is often delayed on these segments.

The "100" numbered routes and "W" routes provide service to the West Bank via the Crescent City Connection bridge crossing the Mississippi River. These routes use the reversible high-occupancy vehicle (HOV) lanes crossing the river and have slightly different morning and evening alignments downtown.

The ferry provides an alternative connection to the West Bank via Algiers Point.

The 2-Riverfront Streetcar, which typically runs adjacent to the Mississippi River, was suspended as of March 2019 due to construction Immediately south of the Canal St. ferry terminal. The French Quarter portion of this route was instead serviced by the 47/48 Canal Streetcar.

System Analysis

Figure 22 - Existing Transit Network (Downtown routes), March 2020

Downtown Service - March 2020 Updates

Since March 2019, there have been enormous changes to the configuration of downtown services due to the to the collapse of the under-construction Hard Rock Hotel at Canal St. and N. Rampart St. in October 2019, directly adjacent to the Canal and Rampart Streetcar lines. The Hard Rock Hotel collapse forced the closure of the Rampart Streetcar and severed the River-bound portion of the Canal streetcar from the rest of the line. In the short-term aftermath of the collapse, the RTA relocated most services to Duncan plaza, with a longer-term plan for service at Duncan implemented in January 2020. The RTA intends to operate at the new Duncan Plaza site indefinitely until a location has been identified for a new, permanent transit hub.

This map reflects all service changes to RTA and JET routes from 2019-2020 to the French Quarter and CBD. Most prominent are the emergency service changes due to the relocation of the main bus hub to Duncan Plaza, along with the addition of a new shuttle route the 46 Canal Bus Bridge, the partial restoration of the 2-Riverfront Streetcar as a separate service, and reduced frequency on the temporary ferries being used to operate service to Algiers Point. During the same period, Jefferson Transit made several changes to the alignments of its downtown bus routes.

Service Frequency and Span

The table on the right shows service spans and frequencies for all RTA and JET routes, using the same color scheme as the previous maps.

Most RTA routes run to midnight and many lines run 24/7. JET spans of service are shorter on weekends, and many JET routes do not run on weekends or run on a drastically reduced schedule.

The mismatched service spans between the RTA and JET create practical problems for riders, as they make the system difficult to use for non 9-to-5 workers. Many riders who rely on both the RTA and JET have difficulty make the return trip to or from Jefferson Parish if they are working late.

- 12 St. Charles Streetcar
- Canal Streetcar (Main)
- 47 Cemeteries
- 48 City Park
- 49 Rampart Streetcar
- Algiers Ferry
- 4 Chalmette Ferry
- 5 Marigny-Bywater
- 10 Tchoupitoulas
- 11 Magazine
- 15 Freret
- 16 S. Claiborne27 Louisiana
- 27 LOUISIANA 28 M.L.King
- 32 Leonidas-Treme
- 39 Tulane
- 45 Lakeview
- St. Bernard (Main)
- 51 St. Bernard-St. Anthony
- 52 St. Bernard-Paris55 Elysian Fields
- 57 Franklin
- 60 Hayne
- 62 Morrison Express
- 63 New Orleans East Owl
- 64 Lake Forest Express
- 65 Read-Crowder Express
- 80 Desire-Louisa
- 84 Galvez
- 88 St. Claude
- 90 Carrollton91 Jackson-Esplanade
- 94 Broad
- 100 Algiers Loop Owl
- 101 Algiers Point
- 102 General Meyer
- 106 Aurora
- 108 Algiers Local
- Gen. de Gaulle
- 114Gen. de Gaulle-Sullen115Gen. de Gaulle-Tullis
- 201 Kenner Loop
- 202 Airport Express
- E1 Veterans E2 Airport
- E3 Kenner
- E4 Metairie Road
- E5 Causeway
- E8 Clearview
- W1 Avondale
- W2 Westbank Express
- W3 Lapalco
- W6 Gretna Local
- W8 Terrytown
- W10 Huey P. Long WSL Westbank Sunday Loop
- SBT St. Bernard Transit

Weekday Service Frequency (March 2019): JET + RTA

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SBT

Revenue Hours as % of Midday Service

Figure 23 - Revenue hours as % of midday service

Peak vs. base service levels

Figure 23 shows the distribution of service hours on RTA and JET bus lines and RTA streetcar lines throughout the day.

Transit agencies typically see an increase in ridership and passenger loads during traditional AM and PM rush hour. In allocating service, transit agencies must choose how much extra service is necessary during those periods. Agencies pursuing a "peak first" strategy will typically allocate the bulk of their service budget to serve riders traveling during rush hour, while agencies pursuing a "base first" strategy will prioritize having consistent levels of service throughout the day.

Jefferson Transit allocates more service hours to peak service than the RTA, and significantly fewer hours to early morning and late evening service. The RTA allocates some resources to additional peak service on bus lines, but many lines maintain a consistent level of service throughout the day. The RTA does not allocate any extra peak service on its streetcars, and in fact does not fully scale up base service on streetcars until about 8 AM.

Figure 24 - Boardings per Revenue Hour, RTA and JET Routes, Spring 2019

Productivity by Time of Day

The figures on the right show trends in ridership, service allocation and productivity (boardings per service hour) for RTA and JET services over a 24-hour period.

RTA bus productivity peaks in the afternoon but is relatively consistent system-wide throughout the day. from about 6 AM to 6 PM. RTA Streetcar productivity also peaks in the afternoon, but with a much sharper "peak" due to fewer riders in the morning.

Conversely, ridership on JET lines peaks in the morning and generally declines throughout the day. This productivity curve is consistent with the service spans on most JET lines: most JET riders in the afternoon are returning home and few are starting new trips, because service does not run late enough for riders to make a return trip later in the evening.

The spike in productivity for JET lines in the early morning is due in part to the small amounts of service (three trips total) that JET operates before 6 AM. That being said, the high productivity of those trips may indicate demand for additional early morning service on certain JET lines.

While there are clear systemwide trends for the bus and streetcar systems, ridership and productivity by time of day varies significantly on individual lines and in different parts of the system. For example, most West Bank bus lines using the Crescent City Connection operated by both the RTA and RTA have a distinct ridership profile, with productivity peaking during morning rush hour. Individual productivity curves for all RTA and JET routes are included in the Route Profiles which accompany this report.

Frequency and Productivity

Productivity for bus and streetcar service is typically measured in boardings per service hour: the number of people riding a bus or streetcar relative to the amount of service (measured in hours) that is being run. Figure 28 compares the mid-day frequency on RTA and JET bus routes to weekday productivity.

In general, there is a clear relationship between frequent service and productivity. The high-frequency streetcar services are significantly more productive than all other fixed-route lines. Higher frequency bus lines - including the 39, 88, and 94 - are in turn more productive than other bus services.

Figure 30 - Daily boardings by stop cluster, spring 2019

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Ridership by Stop

The diagram on the left shows average weekday boardings on RTA and JET stops. Nearby stops have been clustered to allow us to visualize activity on a regional level.

Downtown remains the core of rider activity in the regional system, with stop activity in Orleans Parish concentrated on key transfer hubs, and at certain anchor institutions such as the University of New Orleans. On the West Bank, boardings are highest in the Garden Oaks neighborhood of Algiers, at the Algiers Ferry terminal, and the Gretna portion of the Westbank Expressway east of Manhattan boulevard.

Most Jefferson Parish lines have fewer boardings per stop, with the most significant concentrations of boarding activity are on Veterans Boulevard between Clearview and Causeway, on Jefferson Highway in Elmwood, and in Kenner along Williams Boulevard.

Structure of the network

Radial networks

"Radial" transit systems have most lines connect like spokes on a wheel to a core destination, often downtown. Radial networks work well for transit riders who are trying to travel to or from downtown, because most can do so without having to transfer. Prior to World War II, the majority of economic activity in US cities was concentrated downtown, so most transit systems were originally radial.

The New Orleans bus and streetcar network is highly radial: 31 of 38 RTA lines and 5 of 13 JET lines connect to either the French Quarter or Central Business District. On a given weekday, more than 75% of RTA and JET service connects downtown. As a result, residents of Orleans and Jefferson Parishes have comparatively strong access to jobs downtown, but in most cases, riders traveling to other destinations must travel downtown first to make a transfer.

Crosstown routes

As travel destinations have become more dispersed, many transit agencies responded by adding "crosstown" services to connect major destinations outside of downtown.

The RTA operates several crosstown services with no downtown connection, including the 27, 60, 90 and 94. Two JET routes, the E5 and E8, serve as crosstown connections between the East Bank JET lines connecting to Orleans Parish.

Several other lines connecting to downtown have both "radial" and "crosstown" portions. Route 28 was formed by combining a crosstown route (the 24-Napoleon bus) to the 28-MLK line. The current 32 and 80 bus lines were crosstown services that were later extended to serve downtown. Finally, the 39 creates a crosstown connection between Uptown and Mid-City along S. Carrollton Ave.

Figure 31 - Radial service diagram

Figure 34 - Grid service diagram

Grid networks and routes

Some agencies have reorganized their transit service into "grid" networks, which essentially comprise of a series of high-frequency crosstown routes. Grid networks are suitable for urban areas with dispersed travel activity. Grid networks allow riders to travel quickly between non-downtown destinations by making transfers easier: crosstown routes create more locations for riders to transfer between, and high frequency on the grid network ensures relatively short wait times for riders to transfer.

Most RTA crosstown routes are not frequent enough to participate in a true grid network. The most significant exception to this is the 94 Broad bus, which runs every 15 minutes at peak, and connects to several highridership RTA bus lines along with the Canal streetcar.

Feeders and circulators

"Feeder" (or neighborhood) routes are short lines that are designed to connect riders to a transfer hub to complete their trip. Most feeder routes serve lower-density residential areas at the periphery of the network.

On the East Bank, the 45 and E4 bus lines are feeders for the Canal Streetcar serving Lakeview and Old Metairie, respectively, and connect riders to the Canal Streetcar via Cemeteries Transit Center.

On the West Bank, route 108 connects Algiers residents not served by other lines to Wilty Terminal and the Algiers Ferry. Route W6 is a feeder connecting Gretna residents to Wilty Terminal. Finally, the W1 connects Avondale to services crossing the Mississippi River from Walkertown Terminal.

"Circulator" routes have the opposite function to feeder routes, enhancing connections between areas within the downtown core. The Riverfront and Loyola/Rampart Streetcars function as circulators for the French Quarter and CBD.

Figure 33 - Feeder route diagram

Geographic chokepoints

Transit chokepoints present both challenges and opportunities for bus service. Congestion on chokepoints such as bridges can have significant negative impacts on the reliability of bus service for each route that uses the bridge. However, chokepoints also create a natural incentive to bring bus routes together, allowing riders to transfer between services.

The Industrial Canal separates New Orleans East from the rest of the city. The 62, 64, 65 and 94 lines cross from New Orleans East to Gentilly on Chef Menteur Highway via the Danziger bridge. These routes all connect both immediately before and after crossing the bridge, (at Louisa Street and Downman Road), creating opportunities for riders to transfer between lines.

Three JET lines and five daytime RTA lines connect the West Bank to downtown New Orleans via the Crescent City connection. The W2, W3 and W8 JET lines connect at Wilty Terminal in Gretna.

Currently, the 101/102 RTA lines do not directly connect to the 114/115 or 106 lines prior to crossing the river. The closest links between these lines are a network of stops located adjacent to the Westbank Expressway on General de Gaulle Dr., where some riders are able to transfer, although pedestrian conditions are very unfavorable. However, there are no direct connections between RTA and JET services that cross the river. This means that the Orleans and Jefferson transit networks on the West Bank are completely separated except for the 108 Algiers Local bus, which makes an hourly connection to Wilty Terminal in each direction.

In practical terms, this means that it is often slower to make an Orleans-to-Jefferson trip on the West Bank than to travel downtown on an RTA bus and return on a JET bus.

Figure 35 - RTA West Bank bus stop locations at Gen. de Gaulle

Currently, the RTA's upper and lower Algiers routes do not make a direct connection on the West Bank. Riders transferring from the 101 or 102 to the 106, 114, or 115 must walk several blocks along General de Gaulle under the West Bank Expressway (shown above are the nearest stop locations for these routes).

There are no West Bank connections of any kind between the RTA and JET routes crossing into the CBD. The only West Bank connection between systems is the 108 Algiers Local, which connects Algiers Point to both Gretna and Lower Algiers.

Figure 36 - RTA and JET West Bank service diagram

Direct and indirect routes

When possible, transit routes should create direct, 2-way connections between riders and the destinations they are trying to reach. Circuitous, routes and routes that make detours (deviations) from the main path add time to each trip taken and make service less convenient for most riders. 1-way service acts in the same way by forcing riders to travel the entire length of a 1-way loop over the course of a roundtrip.

Several of the lowest-performing RTA and JET lines have major deviations or other non-direct portions. Route 108 is especially circuitous: a 1-way trip from Old Aurora to the Ferry Terminal takes about twice as long by bus as the same trip takes by car. Because many portions of the 108 are served by other bus lines, relatively few riders take the 108 when other options are available.

Route 65 is much less productive than the other express routes serving New Orleans East. In addition to duplicating much of the service area of Routes 62 and 64, Route 65 has a complex service pattern that includes several deviations from Morrison when traveling inbound to the CBD, and lengthy one way segments in both directions. Because of the deviations on Read and Crowder, it is less convenient for most riders to take the 65 if they have the choice of taking either of the other two express lines from New Orleans East.

Route 45 and Route W6 are both short, one-way loops serving low density neighborhoods.

In some cases, one-way loops are a result of the built environment. Route 60 in New Orleans East has a 13-mile one-way loop section along Hayne and Morrison. The 60 operates as a loop because it is not possible to place infrastructure for inbound stops on Hayne due to the Lake Pontchartrain levee. On-off counts of passengers suggest that most riders do not take the loop around and instead board the inbound stops on Morrison and get off the bus at the outbound Hayne stops, walking at least half a mile every trip.

More direct routes typically provide faster trips for most riders.

Route 108 is highly circuitous, which adds time to riders' trips.

Route 65 has a complex service pattern involving several deviations and 1-way portions that add complexity and time to the route.

Duplicating Service

Some bus and streetcar lines duplicate all or part of another line, reducing the productivity of the overlapping routes.

Route E3 is less productive than would be expected relative to its frequency. In 2018, the RTA's route 39 was extended down Jefferson Highway to serve Ochsner Medical Center. It now overlaps a significant portion of JET's route E3. Because the 39 runs more frequently, and because RTA fares are cheaper, most riders – given the choice – ride the 39. As a result, ridership on the E3 has dropped significantly since 2018 and the line is less productive than would be expected given its frequency.

Route 106 is a peak-only route connecting the Aurora neighborhood of Algiers to the CBD. It overlaps with portions of routes 108 and 114/115, and ridership is quite low relative to the resources it takes to run the service.

Route 90 is a crosstown line connecting Gentilly and Mid-City with neighborhoods along South Carrollton. It partially duplicates the corridor of route 32 and overlaps coverage with the 39 bus line and 48 streetcar line.

Route 5 has the lowest ridership and is the least productive route in the RTA system. Among other issues, Route 5 overlaps with several other lines serving the French Quarter, including the 55 bus and Riverfront streetcar.

Route 10, on Tchoupitoulas, runs parallel to the river several blocks south of the 11-Magazine bus. Many riders are within walking distance of both the 10 and 11 bus lines, both of which serve downtown. Given the option, most riders take the more frequent 11-Magazine bus.

Combining frequencies vs. duplication

It's possible to make duplicating service on some corridors more effective through better scheduling.

The 15 and 91 share a corridor on Oretha Castle Haley from Jackson Ave. to Canal Street. During the initial system review in March, the 15 bus was scheduled to arrive 5 minutes after the 91 on weekday evenings. This meant that few, if any, riders traveling from those stops would take the Freret bus.

Several RTA lines participating in combined frequencies – including the 47/48, and 114/115 – have productivity that is more typical of higher-frequency routes.

Route 90 partially duplicates the corridor of the 32 (connecting Mid City and Uptown), and overlaps coverage on several other routes.

Many people can walk to both the 10-Tchoupitoulas bus and 11-Magazine bus, both of which connect to downtown. The shaded part of the diagram above represents the area within a quarter-mile walk of either bus line. Given the option, most riders take the more frequent 11-Magazine bus.

Exceptions and Outliers

Some bus lines have productivity that is higher or lower than might be expected based on frequency and network characteristics alone.

Routes 51 and 52 each run every 40 minutes but are grouped together here as a 20-minute route because they combine for higher frequency on a portion of St. Bernard Avenue (Routes 114/115 and 47/48 are combined for the same reason.) However, because only about half of the stops on each branch of the St. Bernard line are located on the combined portion, many riders are unable to gain the benefits of higher combined frequency on the shared portion of the route.

Route 28, the MLK-Napoleon bus, is not particularly frequent and (at first glance) is not particular linear. However, it remains quite productive. The current Route 28 was at one point two separate bus lines which were merged into one service, and many riders are still connecting to the transfer hub at Broad and Washington at the midpoint of the route. In this sense, the 28 operates somewhat like a radial route with two arms.

Routes 114 and 115 are quite productive despite taking a circuitous route off of General de Gaulle. This is because the majority of ridership on these lines comes from this portion of the Garden Oaks neighborhood of ALIgiers.

Several other RTA routes, including the 16, 91, and 55, are successful despite low frequency, in part because all three are radial routes serving corridors with a mix of land uses that are supportive to transit.

Route 114/115 boardings in Garden Oaks.

Route 28 in Central City/Uptown

Figure 38 - Midday frequency vs. productivity for RTA and JET bus lines

Three JET routes serving the West Bank – the W2, W3 and W8 – have comparatively high productivity despite running infrequently in the middle of the day. All three routes have high peak ridership, and run extra peak service, so the majority of riders are using these services when the bus is coming more frequently than once an hour. Route W8 in particular has significantly higher ridership when connecting to downtown at peak vs. running a short turn service to Wilty Terminal midday.

Routes E4 and W6 have exceptionally low productivity, in part because both routes are very short, and in part because they serve low-density areas of Orleans and Jefferson Jefferson Parish.

Stop Spacing

Figure 40 and Figure 41 shows information on stop counts and stop spacing characteristics by RTA and JET route.

The RTA and JET routes typically have stops located 650-850 feet apart. A standard New Orleans block is about 360 feet long, so on many routes, stops are being placed less than two blocks apart. This stop spacing is close when compared to many North American transit systems, which typically target stop spacing of 1,000 to 1,500 feet on high frequency bus routes routes (3-5 New Orleans blocks). When stops are spaced closely together, riders will spread out between stops, which requires buses to spend additional time slowing down and stopping to pick up passengers on each route.

As a consequence, RTA and JET bus routes tend to run fairly slowly. Short stop spacing affects passenger trip times, along with the amount of service each agency is able to run particularly on high-frequency routes.

Stop Spacing and Service Classifications

Stop spacing is useful for classifying routes by service category (local, rapid, express), as routes with fewer stops and greater distance between stops offer faster service. Median stop is useful for showing typical stop spacing on routes with express portions. The service classifications used in this chapter are primarily drawn from stop spacing (see diagram at right).

The majority of RTA and JET routes operate as local service. The RTA classifies four routes as "express" routes (the 62-Morrisson, 64-Lake Forest, 65 Read-Crowder, and 202 Airport Express). Traditional express routes are generally designed to create a peak connection for commuters accessing a job market. Many traditional express routes operate as peak-only service. These routes differ from point-to-point express routes such as the 202-Airport Express.

Many transit agencies operate "rapid," limited stop," or "select" service. These routes serve an entire corridor with increased stop spacing (typically at least 1/2 mile between stops). These routes often run alongside complementary local service. The RTA and JET do not currently operate any rapid routes since Katrina, although the RTA previously operated several rapid routes prior to 2005.

Figure 39 - Stop spacing and service classifications

On-Time Performance

Figure 42 and Figure 43 show on time performance for all RTA and JET bus and streetcar lines for May 2019.

The RTA and JET both define service as "late" when a bus arrives more than 5 minutes past its scheduled arrival, and "early" when service arrives more than 1 minute before its scheduled arrival, both of which are standard definitions employed by many transit agencies. Overall, both agencies experience significant on-time performance issues across many routes, with nearly one in four JET trips and 3 in 10 RTA trips being at least 5 minutes late.

Although both agencies face on-time performance issues across the board, lines which serve Downtown tend to have greater on-time performance issues than routes which do not serve downtown. The three JET lines which provide all-day service to the CBD – the W2, W3 and E2 – are the most frequently late lines run by the agency.

The lack of reliability for many RTA and JET lines is compounded by the low frequency of service across the system. Reliability is more important when service doesn't come very often, as riders have less flexibility to take another bus to make their trip. The combination of poor reliability and low frequency can be especially devastating to riders who must transfer to complete their trip, because a late bus can potentially cause a traveler to miss their connection, adding 30 or 60 minutes to a bus rider's travel time. The possibility of missing a transfer is one reason some riders prefer a one seat ride, even if it makes their typical travel time longer.

Traditional measures of on-time performance matter less for high frequency service. A bus line with service at least every 15 minutes provides riders with multiple opportunities to transfer to and from that route. It inconveniences riders much less when a bus leaves a stop early if there is another bus arriving a few minutes later. For this reason, some agencies have begun to adopt different on-time performance metrics for highfrequency core services and low-frequency feeder services.

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Analysis and Service Strategies

System performance

Newer routes have underperformed

Routes added by the RTA and JET since 2011 all currently perform below system productivity averages. This is in part because of design issues involving the routes themselves, and in part because the routes were not conceived as part of a broader network plan for service.

"Legacy" routes may need to be reevaluated

The structure of the existing network continues to closely resemble pre-Katrina transit services in greater New Orleans. Many discussions regarding changes to service continue to reference restoring or re-creating older routes. Post-2011 service changes to RTA and JET routes were done in part to restore pre-Katrina services.

There have been significant changes to the demographics and population distribution of greater New Orleans since Hurricane Katrina, and it is important to frame planning discussions for transit service around the existing needs of the region. Certain bus routes and services may no longer be serving the existing population and needs of the region and should be considered for restructuring or consolidation.

Specialized routes have fewer riders

Several routes in the existing system are designed to serve very specialized needs that make it difficult for those services to attract other riders. The 202 Airport Express, for example, was originally designed as a service for airport employees and construction workers at the new North Terminal, with four round trips each in the morning and evening scheduled to line up with the beginning and end of Airport shifts. Because this service is so specialized, the 202 is less useful for others who might find an express connection to Kenner useful, including both Airport passengers and Kenner residents who are RTA riders.

On-time performance (reliability) is poor, which creates problems on a low-frequency network.

Prior to the Hard Rock Hotel collapse, the RTA and JET both averaged less than 75% on-time performance for bus service. For high-frequency transit networks, traditional measures of OTP are less important because riders are penalized less for missing connections on multi-bus trips.

However, for low frequency bus networks, reliability is quite important, and poor on-time performance can drastically reduce the effective number of destinations riders can access using the network. If a bus is even a few minutes late and causes a passenger to miss a transfer to another route that comes infrequently, passengers may be late by an hour or more. When reliability is poor and service does not come frequently, passengers are much less willing to support changes to their trip that would involve adding more transfers.

Slow service decreases reliability and the amount of service agencies are able to run.

Streetcars, in particular are very slow - fine for local trips but ineffective for longer trips. A one-way trip from end-to-end on the St. Charles Streetcar takes 48 minutes (assuming the streetcar is on time and there are no delays).

- Develop service standards that specify minimum acceptable average speeds
- Develop on time performance standards based on different frequency tiers
- Coordinate with the City of New Orleans, Jefferson Parish and State DOTD to implement projects that enhance bus movement speed.

Design and scheduling

Transfer hubs outside downtown could make service more efficient.

Geographic bottlenecks in the region create opportunities to efficiently connect services to facilitate transfers between riders. Separate RTA and JET services do not connect at a central location before crossing the river.

This creates several issues: it limits connectivity within the Westbank. The only option for connecting between RTA and JET routes is the 108 Algiers Local. Agencies also run redundant service crossing the Mississippi river bridge.

Short distances between stops make service slow.

The RTA and JET routes typically have stops located 650-850 feet apart. This stop spacing is quite close: a standard New Orleans block is about 360 feet long, so on many routes, stops are being placed less than two blocks apart.

Bus stop balancing is a low-cost strategy for transit agencies to increase service speeds and headways, particularly on high-frequency corridors. Better spacing of stops can increase bus speeds by 5-15% even without other improvements to transit infrastructure.

Some areas have duplicating service

The RTA and JET currently run overlapping service on several corridors, including Tulane Ave. in New Orleans and Jefferson Hwy. in Jefferson Parish. Duplicating service reduces the cost-effectiveness and efficiency of services run by both agencies.

Timetables are not set up to make transfers easy.

Timed transfers can be used to improve travel speeds for riders even without increasing frequency. Improving the timing of transfers between RTA and JET routes represents a low-cost opportunity for enhancing the rider experience for cross-parish trips.

Limited night and weekend service on JET routes limits flexibility for riders.

While most RTA bus lines run until at least midnight and many lines operate 24/7 service, JET service ends at 10:00pm. Many JET routes do not run on weekends or run on a drastically reduced schedule. This has practical problems, as it makes the system difficult to use for non 9-to-5 workers.

Many riders who rely on both the RTA and JET have difficulty making the return trip to Jefferson Parish if they are working late.

- Inventory and develop a strategy for stop balancing.
- Develop service standards that specify minimum stop spacing on new routes.
- Specify minimum spacing between new routes as part of agency service standards document to avoid duplicating coverage
- Conduct an inventory of accessibility and amenities at bus stops. Those with low ridership and no facilities are prime candidates for removal.
- RTA and JET collaborate to identify appropriate locations for transfer hubs outside of downtown.
- Increase short-term planning collaboration between agencies.

Fares and Transfers

The fare structure penalizes riders for making transfers.

Building bus networks around transfer hubs make service more efficient, because it's more effective to connect many services to a central location than to run individual bus lines to every key destination. This works in the exact same way that passenger airlines structure their service: rather than run nonstop flights to each city.

Transfer activity is good for transit because it allows agencies to design more efficient service, by eliminating duplicating and inefficient routes created due to a desire for one-seat rides by riders.

Potential strategies:

- Evaluate alternative fare structures that provide for seamless transfers.
- Fully incorporate the Algiers Ferry into the RTA fare structure
- RTA-JET regional fare structure

Infrastructure

The system as a whole would benefit from transit infrastructure on downtown streets.

Most service operates downtown. The majority of RTA bus lines operate on the O'Keefe/Rampart/Loyola corridors. Creating dedicated transit infrastructure on those corridors would have reliability and cost-saving benefits throughout the system.

Lack of facilities make transfers unappealing for riders.

Many major transfer areas – including the downtown transfer zone at Elk and Canal, but also major satellite transfer hubs such as Tulane and S. Carrollton and Desire Parkway at Chef Menteur – lack adequate bus shelters or supportive facilities such as pedestrian crossings. This lack of facilities makes transfers unappealing for riders.

Some issues require leadership from the City of New Orleans and Jefferson Parish.

The RTA and JET have only partial control over some of the key factors governing the overall quality of transit service. Local governments and the state have control over most issues involving the streets buses travel on, including pedestrian infrastructure, signal timing, right of way allocation, and intersection geometry, all of which have significant effects on the speed, reliability and accessibility of transit.

- Work with the City of New Orleans, Jefferson Parish, and LA DOTD to identify corridors downtown and elsewhere to prioritize for transit enhancements
- Develop a framework for prioritizing bus stop enhancements.
- Work with the public works departments of Orleans and Jefferson Parish to prioritize pedestrian enhancements around bus stops.

Planning and operations issues

The Algiers Ferry has not been fully integrated into the RTA's planning and operations.

The RTA assumed operations of the Algiers Point Ferry in 2013 from the Louisiana Department of Transportation and Development (LA DOTD). Until recently, ferry operations were fully funded by the state of Louisiana, and the RTA essentially served as a passthrough for LA DOTD funds to operate the fairy.

After initially falling when a \$2 cash fare was introduced, ridership on the ferry has rebounded and remains high as of Spring 2019. The ferry has potential to serve an important role in the broader network by providing an alternative to the Crescent City Connection for transit trips from the West Bank into downtown.

However, the Algiers Point Ferry has remained operationally separate from the RTA's other services and has not been fully incorporated into the agency's ongoing planning efforts. Only one low-frequency bus route, the 108 Algiers Local, connects to the ferry from the West Bank. The ferry also maintains a separate fare structure from all other RTA services and is not incorporated into daily RTA passes for the RTA-JET Regional Ride pass, discouraging bus and streetcar riders from making a transfer.

A bus network redesign creates opportunities to more fully integrate ferry operations into the rest of the RTA's network, and potentially relieve peak load on some West Bank bus routes by connecting more service to the ferry.

The RTA and JET should coordinate more closely.

For a number of reasons, including the transportation geography of the region and the RTA's operations in both New Orleans and Kenner, the RTA and JET are more interconnected than is typical for a regional and suburban/municipal transit provider. Both agencies extensively interoperate in each other's service areas, and RTA bus riders in Kenner and parts of Algiers often depend on JET services to make multi-line trips ending in Orleans Parish.

Historically, there has been very little coordination between the RTA and JET on either longer-term, comprehensive planning projects or ongoing planning and scheduling. The agencies do coordinate to provide certain services: for example, Jefferson Transit contracts with the RTA to operate Rideline, the joint public information hotline for both agencies, while the RTA contracts with JET to operate paratransit services in the City of Kenner. However, there is currently no established framework for coordination between agencies for scheduling and service changes.

There is currently significant duplication between the RTA and JET networks, no significant scheduling coordination to allow timed transfers between connecting lines, and a lack of collaboration on key regional goals such as expanded airport access or the siting and funding of a downtown transit hub. Until recently, both agencies also operated under fully independent fare structures.

Both agencies have expressed a strong desire for closer coordination and committed to participating in, and implementing recommendations from, the bus network redesign process. The agencies recently collaborated to introduce Regional Ride, a day pass covering services from both systems.

Both agencies could increase ridership and reduce costs by eliminating redundant service, by streamlining the rider experience of transferring between the two systems. However, this is very unlikely to happen in practice unless both agencies commit to establishing regular, consistent processes for coordinating scheduling, operations, and service and capital planning needs.

The transit agencies should adopt service standards and commit to following long-term planning goals.

The RTA and JET had no comprehensive standards for planning new service since Hurricane Katrina. Since 2011, service expansions have occurred primarily on an ad-hoc basis.

These newer services have not been introduced as part of a comprehensive service strategy and have typically performed poorly relative to existing services. In 2018, the RTA took the first steps towards a comprehensive service strategy in its Strategic Mobility Plan, a 20-year comprehensive plan developed to guide future service enhancement and expansion.

The agencies can build on this by introducing clear, objective service standards and following the recommendations laid out in the strategic planning process.

- Implement a regular process for coordination with other regional transit providers – particularly JET.
- Meetings before each service pick to coordinate timetables and timed transfers.
- Establish a process for coordinating on major capital projects such as the downtown transit center.
- Build on coordinated public information sharing with JET: explore options such as a regional system map and integrated real-time tracking app.
- Explore a unified regional fare structure incorporating both agencies.
- Resume quarterly progress updates on Strategic Mobility Plan (SMP) action items.