



# Wake and Durham Bus Plans

Route Performance Review

January 4, 2022

**N** NELSON  
NYGAARD

**GO FORWARD**  
A COMMUNITY INVESTMENT IN TRANSIT

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# **1 – Overview, Background and Summary of Findings**

# Task Overview

As part of the Wake Transit Bus Plan, the Transit Planning Advisory Committee (TPAC) established a framework to monitor and track the performance of individual bus routes funded with Wake Transit Plan revenues. This framework - the Wake Transit Plan Service Guidelines and Performance Measures - was designed to communicate a clear, consistent and equitable strategy that is understandable to the Wake Transit Plan's stakeholders: transit riders, transit operators, elected officials and taxpayers.

As part of the framework, the Service Guidelines and Performance Measures establishes both evaluate individual routes and guide investment at the route level. The Service Guidelines and Performance measures were designed to be flexible and accommodate changes in the network. With these goal in mind, the TPAC also recommended that the guidelines, standards, measure and targets be reviewed at least once every four years to ensure they continue to represent best practices and are successfully guiding the Wake Transit Plan.

## APPROACH

This analysis – prepared in 2022 - evaluated individual bus route funded by the Wake Transit Bus Plan against the standards, measures and targets set in 2018 and approved by the TPAC. It is the first time the Wake Transit Plan partners have comprehensively evaluated individual transit routes and the transit network overall against the established Service Guidelines and Performance Measures. Given the timing of the analysis, the study team also considered the impact of the COVID-19 pandemic on route performance.

In addition, the Wake Transit Plan partners reviewed the performance standards themselves, to determine if they are still appropriate and effective ways to measure and understand route performance. The team also considered industry trends and best practices to evaluate transit service performance.

## KEY TERMS

The Wake Transit Plan Service Guidelines and Performance Measures defined a handful of terms, which are repeated here. A definition of the COVID time period was added to this list in 2022:

- A **guideline** is a recommendation that leads or directs a course of action to achieve a certain goal.
- A **standard** sets the minimum investment required to reach the service classification. For example, this report sets standards for the span of service expected for demand-response service.
- A **measure** is a reference point against which performance is evaluated. Measures can be evaluated against a baseline value or against a specific target.
- A **target** is the defined value set for individual measures. For example, a target might be 20 passengers per revenue hour.
- The **COVID time period** is defined as March 2021 through December 2021. Pre-COVID is the time period before March 2020 and no post-COVID timeframe has been defined.

## KEY DATA SOURCES

The Route Level Performance Evaluation used the Wake Transit Bus Plan Service Guidelines and Performance Measures as the guiding document for this analysis. Data used to support the evaluation was provided by the individual transit operators (GoCary, GoRaleigh and GoTriangle). The evaluation considered performance over a period of five years (2016-2021). Data sources are listed in Appendix 1.

# Background: Route Classifications and Performance Measures

## ROUTE CLASSIFICATIONS

The Wake Transit Plan consists of a variety of services, inclusive of high productivity/high-capacity services (frequent transit) to lower productivity, coverage-oriented services (demand-response services). Individual service types require different levels of investment and have different operating expectations, so the Wake Transit Plan created a route classification system.

The route classification system was designed so that routes could be compared within the context of similar routes. It was also designed to guide investment and development of individual routes, by allowing individual routes to move up and down the classification hierarchy. This means that a route that over-performs the expectations for its classification category could be “upgraded” with additional investment in service hours and frequency. The Wake Transit Plan established unique service types:

1. **Frequent Routes** – high capacity, high productivity services that operate along densely developed arterials and offer a high level of frequency.
2. **Local Routes** – operate along primary arterials in areas of less dense development patterns with relatively frequent, simple and direct service.
3. **Community Routes** – serve low-density communities and neighborhoods with a focus on providing coverage and access.
4. **Demand Response Services** – serve the lowest density areas with curb-to-curb service, typically scheduled in advance.
5. **Core Regional Routes** – provide longer distance service connecting major activity centers. They typically operate with limited stops and use freeways and expressways where appropriate.
6. **Express Routes** – operate during peak period commute periods and operate with limited stops.
7. **Shuttle Services** – provide connections between a small number of activity centers.

## PERFORMANCE MEASURES

The Wake Transit Plan Performance Measures consist of a focused set of measures that capture the critical aspects of service productivity, efficiency and cost effectiveness and at the same time can be easily reproduced and communicated. The four performance measures include:

- **Operating Cost per Passenger Boarding** - reflects the cost of serving each passenger boarding. It is calculated by dividing operating and administrative costs by the total number of passenger boardings.
- **Passenger Boardings per Revenue Hour** – measures how well the service is being used by dividing the number of passenger boardings by the number of vehicle revenue hours. For core and suburban regional service this is measured as passenger boardings per trip (the one-way operation of a vehicle between two endpoints on a route) due to the longer distance trips and unique service characteristics.
- **Farebox Recovery** - is the ratio of revenue earned at the farebox divided by operating costs. It is a relative indicator rather than absolute measure.
- **On-Time Performance** - measures how closely a transit service adheres to the published schedule. It is an important measure for transit users because it directly impacts service reliability. On-time performance is measured by comparing scheduled and actual bus departure and arrival times at fixed time points (bus stops). Most transit operators set bands around scheduled times to allow for some variation in the schedule, so that service is considered on time if the vehicle arrives no more than one minute before and five minutes after the published schedule at designated timepoints. On-time performance is typically measured as a percentage (i.e., 85% of all routes are on-time).

# Background: Phasing of Targets and Over- and Under-Performance Routes

## PHASING OF TARGETS

The Wake Transit Plan Service Guidelines and Performance Measures were designed to measure the productivity of a mature and complete transit network. Given that bus services associated with the Wake Transit Plan are being phased in over time, the TPAC agreed that the expectations for the performance measures would be phased in over time. This approach ensured that the performance targets would be appropriate for the life of the Wake Transit Plan.

In practice this means that performance standards, excluding on-time performance, have lower targets in the initial years, but those targets increase over time. Accordingly, individual routes will be evaluated according to the following schedule:

- Fiscal Years 2017-2021 – 80% of target
- Fiscal Years 2022-2026 – 90% of target
- Fiscal Year 2027 and beyond – 100% of target

On-time performance is expected to increase as service improves and ridership increases. For that reason, the phased schedule is the inverse for this performance standard and should be evaluated according to the following schedule:

- Fiscal Years 2017-2021 – 120% of target
- Fiscal Years 2022-2026 – 110% of target
- Fiscal Year 2027 and beyond – 100% of target

## OVER- AND UNDER-PERFORMING ROUTES

The TPAC recommended a tiered system for addressing over- and under- performing routes. This process is designed to be clear, consistent, and fair while ensuring the most cost-effective investments are prioritized.

1. New routes or routes undergoing significant changes (defined as a 20% change in

revenue miles or hours) will be classified as new and exempt from performance measures services for a period of 18 months to build ridership and the market for transit services.

2. Local transit providers will review route productivity annually (in conjunction with the annual work plan process). Routes identified as under- or over-performing will be considered as part of the local transit provider's existing route review process. Any actions resulting from this are at the discretion of the transit providers.

3. Any significant changes to the funding of individual routes will be recommended as part of the update to the Wake Transit Bus Plan, a process that is envisioned to occur at least once every four years. As part of this process, routes that have over- or under-performed relative to at least three of their respective standards for the past three or more consecutive quarters will be subjected to more strenuous review. This process will include reviewing:

- The specific performance measures where over- or under-performance has been recorded, including duration and the magnitude of the gap.
- Exogenous variables out of the transit providers' control that may have contributed to over- or under-performance.
- Efforts under-taken by the transit provider to address over- or under-performance.

Routes that consistently over-perform set targets and have not received additional investment may be considered for additional resources. Additional resources may be used to advance the route classification to a higher tier or service (i.e., graduate service from a local route to a frequent route).

Likewise, routes that have exhausted their route development period and have not improved with annual adjustments may be recommended for a reduction or elimination of funding. For example, a reduction in funding may be used to move a route down a classification tier (i.e., from a community route to a demand response service).

# Key Findings: Route Level Evaluation

## ROUTE LEVEL EVALUATION

The Wake Bus Plan included a detailed analysis of the performance of Wake Transit Plan funded bus routes. This section includes a summary of the key findings by route category. As mentioned, this analysis is accompanied by a [route performance dashboard](#), or spreadsheet tool is also available for more detailed analysis.

### FREQUENT ROUTES

- Performance varied among the Frequent Routes with two routes (Routes 1 and 15) exceeding standards. One route (19) struggled to meet the productivity standards.
- All Frequent Routes struggled to meet the on-time performance metric.
- COVID impacted route performance, but the Frequent Routes were not significantly impacted by the pandemic or by 2021 they have recovered from the early impact of the public health restrictions.

### LOCAL ROUTES

- The pandemic had a clear and significant impact on the performance of the Local Routes. Several of the routes performed well until 2020 and 2021.
- Three Local Routes are candidates for additional investment (Routes 11, 21 and 22). These routes consistently met or exceed the Local Route standard.
- The performance measures provided a useful screening of a large category of bus routes and helped identify stronger routes. The process also revealed that bus routes require the phased in / ramp up phased approach.

### COMMUNITY ROUTES

- Community Routes struggled to meet their performance standards. While the pandemic partially explains some of the challenges, as a category these routes suffered from low productivity, poor on-time performance and high costs.

- Community Routes cost twice (or more) as much as Local and Frequent Routes in terms of the cost per boarding. Some routes are candidates for microtransit or other on-demand types of service.

### CORE REGIONAL ROUTES

- Core Regional Routes struggled to meet their performance standards. While the pandemic partially explains some of the challenges, as a category these routes suffered from low productivity, poor on-time performance and high costs.
- The Core Regional Routes with the strongest performance included some of the legacy routes providing connections between the region's strongest activity centers, such as Durham to Chapel Hill and Carrboro, and Durham to the Regional Transit Center.
- Some of the standards for the Core Regional Routes are likely set too high. Two metrics - farebox recovery rate and boardings per trip – are set either at the same rate as Frequent Routes and/or higher for Express Routes. In addition, even the strongest routes failed to meet these standards.

### EXPRESS ROUTES

- Express Routes showed mixed results with regards to the Wake Transit Plan performance standards. Performance varied by metric and by duration of route operations.
- For example, most Express Routes met the operating cost per boarding and boardings per revenue trip metric but did not achieve the farebox recovery ratio. This suggests that the farebox recovery ratio may be set too high and is unrealistic given the costs associated with operating peak only, longer distant routes.
- Express Routes with a longer operating history, such as the CRX, DRX, FRX and ODX consistently met the standards, while the newer routes (WRX and ACX) struggled to meet the standards.

# 2 – Route Level Evaluation



# Overview

The Wake Bus Plan included a detailed analysis of the performance of Wake Transit Plan funded bus routes. A high-level summary analysis of the overall performance is provided in the following text. A [route performance dashboard](#), or spreadsheet tool is also available for more detailed analysis.

The route level performance is organized by route classification. As mentioned, the Wake Transit Plan identified seven unique types of routes. In 2022, there are five route types\* funded through the Wake Transit Plan:

**Frequent Routes** – high capacity, high productivity services that operate along densely developed arterials and offer a high level of frequency.

**Local Routes** – operate along primary arterials in areas of less dense development patterns with relatively frequent, simple and direct service.

**Community Routes** – serve low-density communities and neighborhoods with a focus on providing coverage and access.

**Core Regional Routes** – provide longer distance service connecting major activity centers. They typically operate with limited stops and use freeways and expressways where appropriate.

**Express Routes** – operate during peak period commute periods and operate with limited stops.

## DATA

In some cases, data is not shown in a chart for a particular route or year. This is either because it is a new route not yet represented or data was not available or provided.

## PERFORMANCE MEASURES

As mentioned, the route performance evaluation uses four measures designed to capture the critical aspects of service productivity, efficiency and cost effectiveness and at the same time can be easily reproduced and communicated.

- **Operating Cost per Passenger Boarding** - reflects the cost of serving each passenger boarding. It is calculated by dividing operating and administrative costs by the total number of passenger boardings.
- **Passenger Boardings per Revenue Hour (or per Trip)\*\*** – measures how well the service is being used by dividing the number of passenger boardings by the number of vehicle revenue hours. For core and suburban regional service this is measured as passenger boardings per trip (the one-way operation of a vehicle between two endpoints on a route) due to the longer distance trips and unique service characteristics.
- **Farebox Recovery** - is the ratio of revenue earned at the farebox divided by operating costs. It is a relative indicator rather than absolute measure.
- **On-Time Performance\*\*** - measures how closely a transit service adheres to the published schedule. It is an important measure for transit users because it directly impacts service reliability. On-time performance was measured as a percentage (i.e., 85% of all routes are on-time).

The following page includes a summary of the standards for each metric.

*\*Shuttle and demand response services were not funded by the Wake Transit Plan during this timeframe*

*\*\*Boardings per Revenue Hour and On-Time Performance use the month of April for each year as a representative month and used as consistent comparison point.*

# Wake Transit Plan Standards

Standard	Frequent Route		Local Route		Community Route		Core Regional Route*		Express Route*	
	80% (FY21)	Standard	80% (FY21)	Standard	80% (FY21)	Standard	80% (FY21)	Standard	80% (FY21)	Standard
Passengers Boardings per Revenue Hour (or Trip)	20	25	16	20	8	10	16	20	8	10
Operating Cost per Boarding	\$7.20	\$6.00	\$7.20	\$6.00	\$12.00	\$10.00	\$7.20	\$6.00	\$12.00	\$10.00
Farebox Recovery Ratio	16%	20%	12%	15%	8%	10%	16%	20%	12%	15%
On-Time Performance**	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%

\*Core Regional Routes and Express Routes follow Passenger Boardings per Revenue Trip

\*\*On-Time Performance has standard across all service types of 85%

Note: Average weekday standard only shown; Demand Response and Shuttle Services not included

# Frequent Routes

## PERFORMANCE EVALUATION

There are four Wake Transit Plan funded Frequent Routes (Routes 1, 7 15 and 19). The R-Line was also part of the frequent route category but was discontinued during COVID. The next page summarizes the frequent routes and classifies them as under or overperforming. The following pages include graphs of Wake Transit Plan funded Frequent Routes for each performance metric.

### OPERATING COST PER PASSENGER BOARDING

The Operating Cost per Passenger Boarding for Frequent Routes was set at \$6.00. Given the frequent routes are mature routes with several years of operating experience, the 2021 standard reflects 100% of the target, or \$6.00:

- Routes 1, 7 and 15 consistently met the target.
- Route 19 met the target except in 2019, when the operating cost per passenger boarding was \$11.00.

### PASSENGER BOARDINGS PER REVENUE HOUR

The Passenger Boardings per Revenue Hour standard for Frequent Routes was set at 25 riders per revenue hour all day with a phased target of 20 riders per revenue hour:

- Routes 1 and 15 consistently met target.
- Route 7 met the target in all years except 2021.
- Route 19 consistently missed the target.

### FAREBOX RECOVERY

The Wake Transit Plan set a Farebox Recovery Ratio metric of 20% and the current the standard is at 80% of the target, or a 16% farebox recovery ratio. Note that fares were suspended in 2020 due to the COVID pandemic, so the analysis focuses on 2016-2019:

- Routes 1, 7 and 15 met target for all years, while Route 19 missed the target.

### ON-TIME PERFORMANCE

The on-time performance standard sets the expectation that routes meet the standard 85% of the time.

- All routes showed challenges in consistently meeting this standard.
- Route 7 met the target in 2016 and 2017.

## SUMMARY FINDINGS

- Routes 1 and 15 are the highest performing Frequent Routes suggesting additional investment is warranted. Indeed, these two routes are currently being developed as Bus Rapid Transit (BRT) corridors.
- Route 19 is the weakest of the Frequent Routes and is classified as an underperforming route.
- All Frequent Routes struggled to meet the on-time performance metric.
- COVID impacted route performance, but the Frequent Routes were not significantly impacted by the pandemic or by 2021 have recovered from the early impact of the public health restrictions.
- Operating Cost per Passenger Boarding seemingly needs adjusting because most routes easily met the criteria, even if they had relatively low ridership. With one exception, the Frequent Routes consistently met the 2027 standard for all years. A potential improvement to the Performance Standards would be to lower the operating cost per boarding from \$6.00 per boarding to \$4.00 per boarding.

# Frequent Routes

No.	Name	Status	Performance Status
1	Capital Boulevard	Mature	<i>Meets/Exceeds Standard</i>
7	South Saunders	Mature	<i>Meets Standard</i>
15	Wake Med	Mature	<i>Meets/Exceeds Standard</i>
<b>19</b>	<b>Apollo Heights</b>	<b>New</b>	Under-performing
R-Line	Downtown Circulator	Suspended	Not evaluated

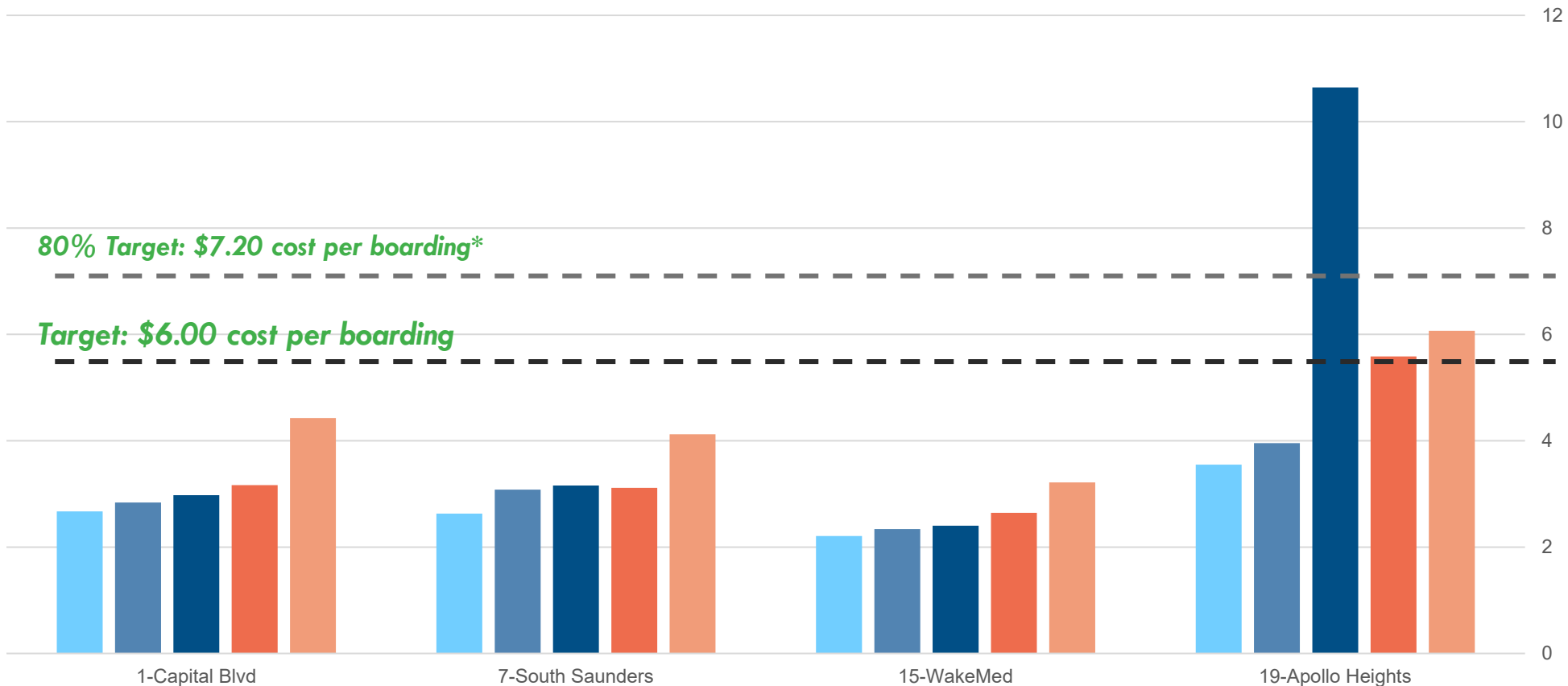
## Notes:

- Routes 1, 7, and 15 have been operating as frequent routes before 2016 and were evaluated against the “mature” criteria.
- **Route 19 is a new route and was evaluated against the 80% standard.**
- Per the Wake Transit Plan Service Standards and Performance Guidelines, under-performing routes are defined as routes that fall below the minimum standards for three or more performance measures for a period of three or more consecutive quarters. For purposes of this evaluation, which uses a single annual data point, routes are considered underperforming if they under perform for three or more measures for at least three years.

# Frequent Bus Routes

OPERATING COST PER BOARDING (FY)

2017 2018 2019 2020 2021



80% Target: \$7.20 cost per boarding\*

Target: \$6.00 cost per boarding

**Frequent Bus Routes**

- 1 Capital Blvd
- 7 South Saunders
- 15 Wake Med
- **19 Apollo Heights**

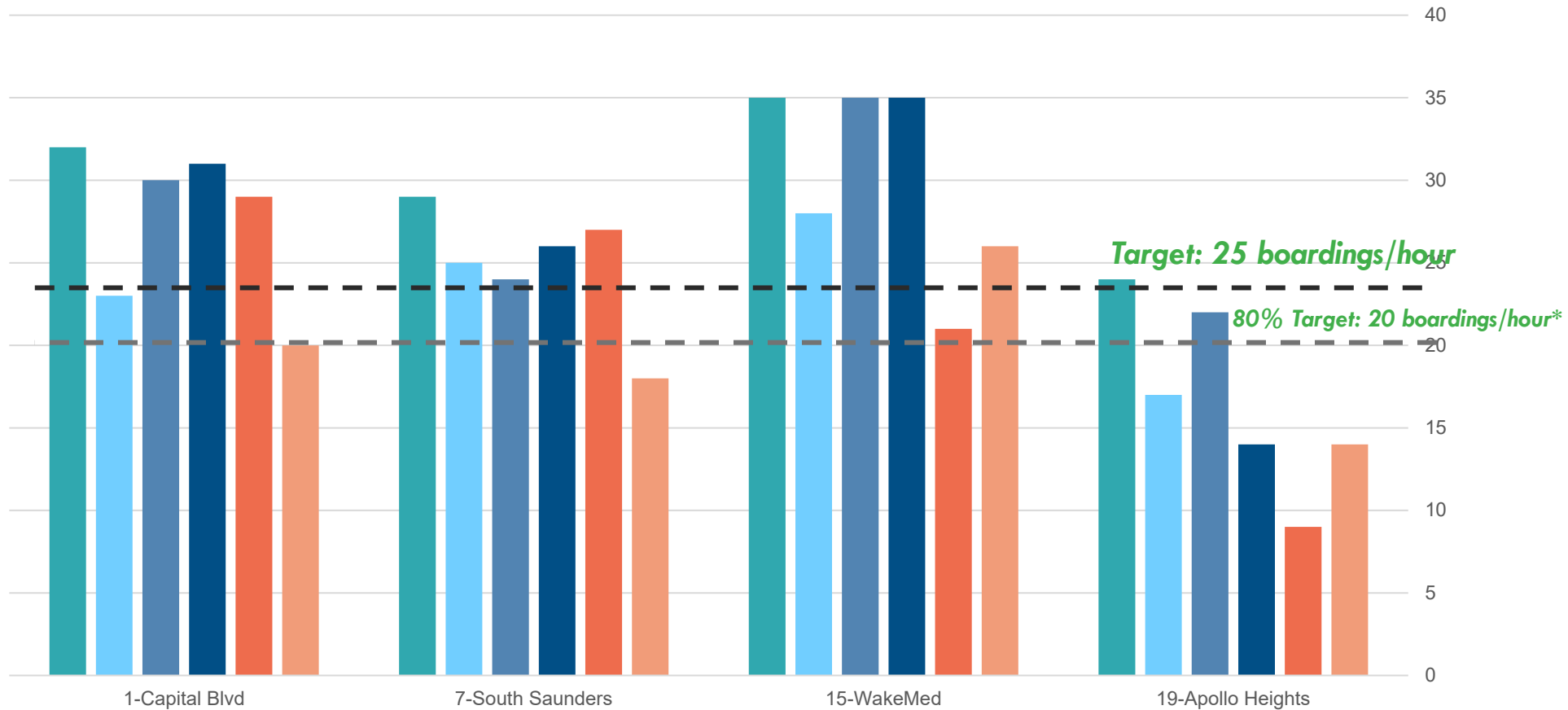
\* Route 19 is a more recent addition and is evaluated against the 80% target.

Routes 1, 7 and 15 have been operating for more than 18 months and are evaluated against “mature” status.

# Frequent Bus Routes

BOARDINGS PER REVENUE HR (APRIL - WEEKDAY)

■ 2016 ■ 2017 ■ 2018 ■ 2019 ■ 2020 ■ 2021



## Frequent Bus Routes

- 1 Capital Blvd
- 7 South Saunders
- 15 Wake Med
- **19 Apollo Heights**

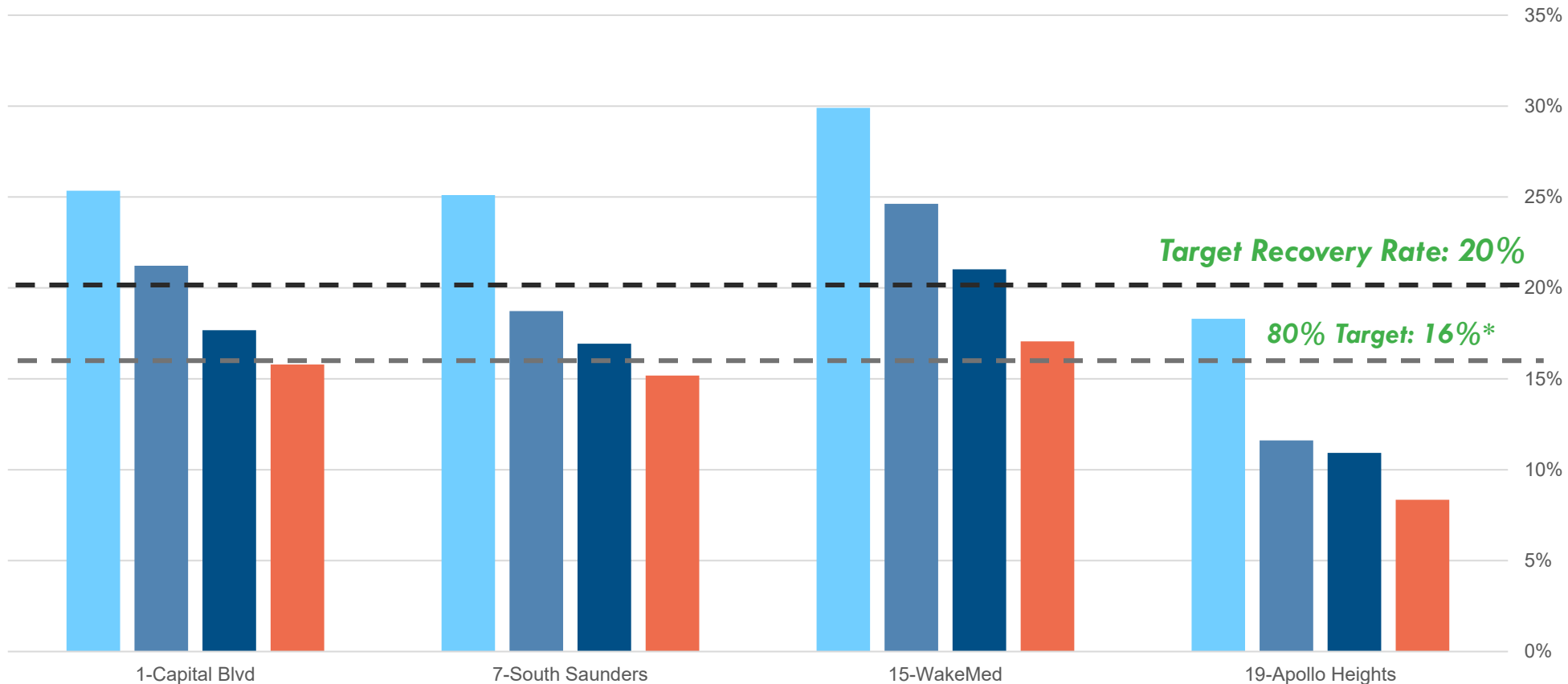
\* Route 19 is a more recent addition and is evaluated against the 80% target.

Routes 1, 7 and 15 have been operating for more than 18 months and are evaluated against “mature” status.

# Frequent Bus Routes

FAREBOX RECOVERY RATIO (FY)

2017 2018 2019 2020



## Frequent Bus Routes

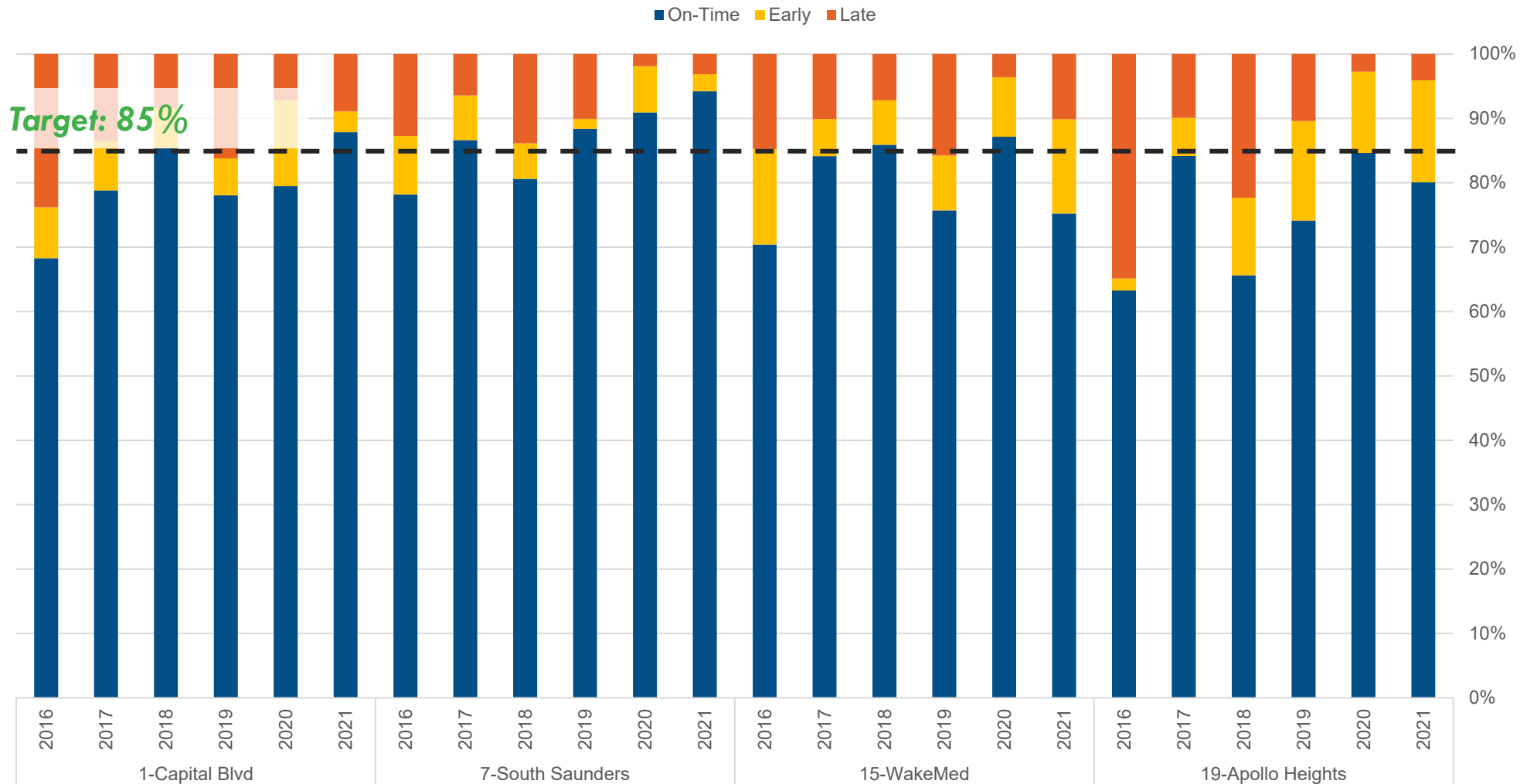
- 1 Capital Blvd
- 7 South Saunders
- 15 Wake Med
- 19 Apollo Heights

\* Route 19 is a more recent addition and is evaluated against the 80% target.

Note: Fares were suspended March 2020 and will remain suspended until July 2022 due to COVID-19; 2016 data excluded due to potential data inaccuracies; Routes 1, 7 and 15 have been operating for more than 18 months and are evaluated against “mature” status.

# Frequent Bus Routes

ON-TIME PERFORMANCE (APRIL - WEEKDAY)



## Frequent Bus Routes

- 1 Capital Blvd
- 7 South Saunders
- 15 Wake Med
- **19 Apollo Heights**



# Local Routes

## PERFORMANCE EVALUATION

There are 26 Wake Transit Plan funded Local Routes. Routes are listed in the subsequent pages, together with graphs of performance by route against the Wake Transit Plan standard.

### OPERATING COST PER PASSENGER BOARDING

The Operating Cost per Passenger Boarding for Local Routes was set at \$6.00. Given the measure is phased in, the 2021 standard (80% of target) is \$7.20:

- Most routes are at or below the target, especially routes that have been in operation for multiple years.
- The pandemic impacted performance on this metric. Several routes – especially newer ones – had poorer performance with increasing operating cost per passenger boarding in 2020 and 2021.

### PASSENGER BOARDINGS PER REVENUE HOUR

The Passenger Boardings per Revenue Hour standard for Local Routes was set at 20 riders per revenue hour (all day standard). The 80% target is 16 riders per revenue hour:

- Results overall are mixed. Some routes met and continue to meet the standard, while others did not, both before and during COVID.
- The pandemic had a major impact on the Local Routes. Several routes – especially newer ones – had poorer performance due to the pandemic with lower ridership in 2020 and 2021.
- Routes 5, 11, 21 and 22 performed highest prior to COVID, while Routes 3, 10 and 25L were the lowest performing.

### FAREBOX RECOVERY

The Wake Transit Plan set a Farebox Recovery Ratio standard of 15% and the current the standard is at 80% of the target, or 12%. However, fares were suspended for all routes due to the COVID pandemic. As a result, the analysis reflects 2016 - 2019:

- Several routes met or nearly met the farebox recovery target between 2016 and 2020. A handful of routes exceeded it.

### ON-TIME PERFORMANCE

The on-time performance sets the expectation that routes meet the standard 85% of the time. No Local Routes consistently met the Wake Bus Plan on-time performance standard.

## KEY FINDINGS

- The pandemic had a clear and significant impact on the performance of the Local Routes. Several of the routes had been performing well but declined in 2020 and 2021.
- Three Local Routes are candidates for additional investment (Routes 11, 21 and 22). These routes consistently met or exceeded the Local Route standard.
- The operating cost per passenger boarding standard could be strengthened. Most Local Routes exceeded the phased target of \$7.20 per passenger boarding as early as 2017 and most would have met or exceed the 2027 target of \$6.00 per passenger boarding.
- The performance measures provided a useful screening of a large category of bus routes and helped identify stronger routes. The process also revealed that newer routes require time to ramp up.

# Local Routes

No.	Name	Status	Performance Status
2	Falls of Neuse	Mature	<b><i>Meets/Exceeds Standard</i></b>
3	Glascok	Mature	Under-Performing
4	Rex Hospital	Mature	Under-Performing
5	Biltmore Hills	Mature	<b><i>Meets/Exceeds Standard</i></b>
6	Crabtree	Mature	Meets Standard
7L	Carolina Pines	Mature	Under-Performing
8	Six Forks	Mature	Under-Performing
10	Longview	Mature	Under-Performing
11	Avent Ferry	Mature	Under-Performing
11L	Buck Jones	Mature	Under-Performing
12	Methods	Mature	<b><i>Meets/Exceeds Standard</i></b>
13	Chavis Heights	Mature	Under-Performing
15	Trawick Connector	Mature	Under-Performing
16	Oberlin	Mature	Under-Performing
18	Poole Barwell	18/18S received additional Wake Transit Plan investments	Under-Performing

Notes:

- Local routes include a combination of “new” and “mature” routes.
- **New routes were evaluated against the 80% standard, while mature routes were evaluated against the full standard.**
- Mature routes included routes operating before 2016 with WTP funded investments relate to span and frequency improvements or minor route alignment changes.
- Per the Wake Transit Plan Service Standards and Performance Guidelines, under-performing routes are defined as routes that **fall below the minimum standards for three or more performance measures for a period of three or more consecutive quarters.** For purposes of this evaluation, which uses a single annual data point, routes are considered underperforming if they under perform for three or more measures for at least three years.

# Local Routes

No.	Name	Status	Performance Status
18S	Poole Barwell	18/18S received additional Wake Transit Plan investments	Under-Performing
20	Garner	New	Under-Performing
21	Caraleigh	Mature with frequency investment	<b>Meets Standard</b>
22	State Street	Mature	Under-Performing
23L	Millbrook	Mature	Under-Performing
24L	North Crosstown	Mature	Under-Performing
25L	Triangle Town Link	Mature	Under-Performing
27	Blue Ridge	New	Under-Performing
33	Knightdale	New	Under-Performing
36	Creedmore	New	Under-Performing

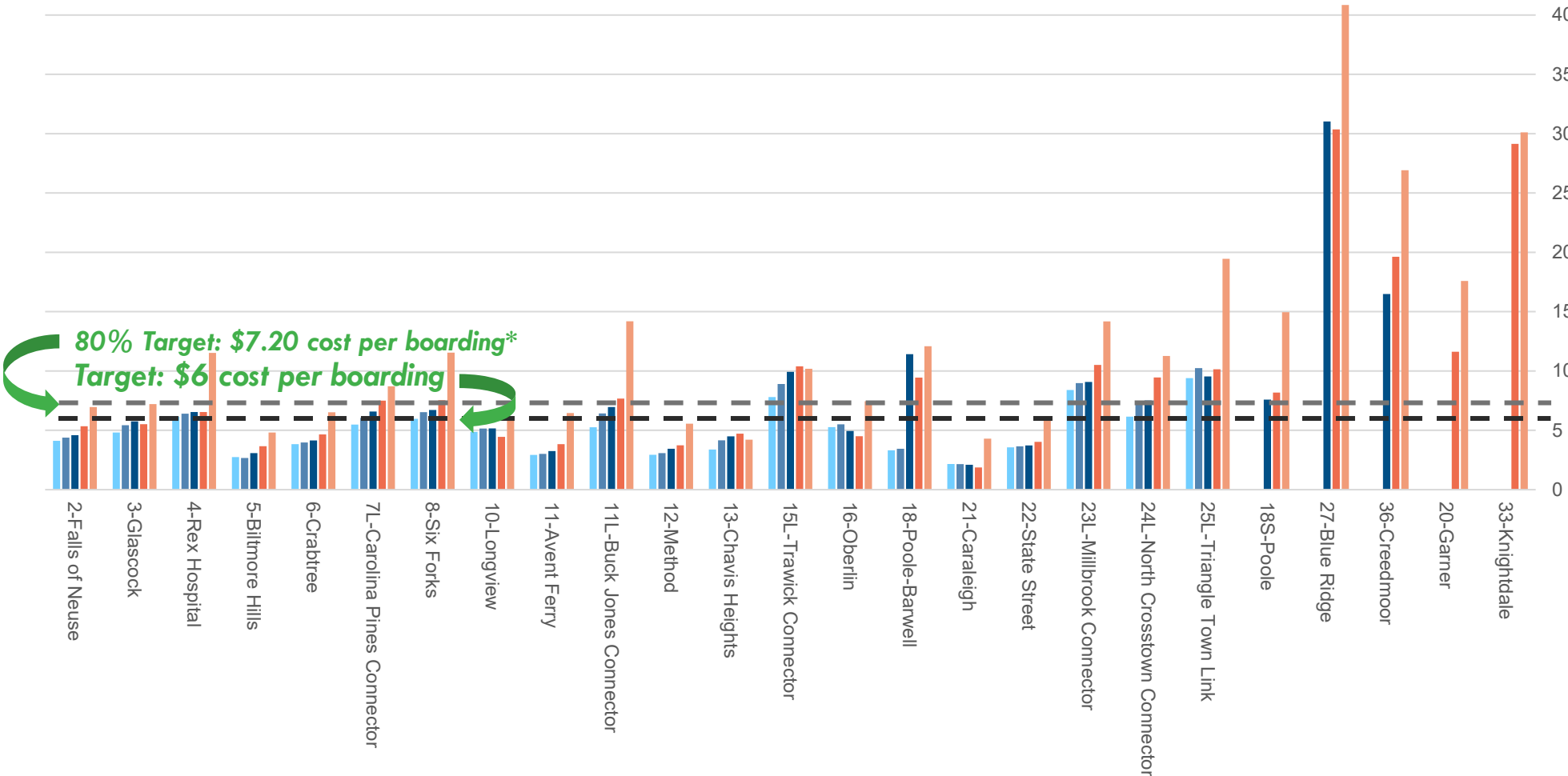
#### Notes:

- Local routes include a combination of “new” and “mature” routes.
- New routes were evaluated against the 80% standard, while mature routes were evaluated against the full standard.**
- Mature routes included routes operating before 2016 with WTP funded investments relate to span and frequency improvements or minor route alignment changes.
- Per the Wake Transit Plan Service Standards and Performance Guidelines, under-performing routes are defined as routes that fall below the minimum standards for three or more performance measures for a period of three or more consecutive quarters. For purposes of this evaluation, which uses a single annual data point, routes are considered underperforming if they under perform for three or more measures for at least three years.

# Local Bus Routes

OPERATING COST PER BOARDING (FY)

2017 2018 2019 2020 2021



80% Target: \$7.20 cost per boarding\*  
Target: \$6 cost per boarding

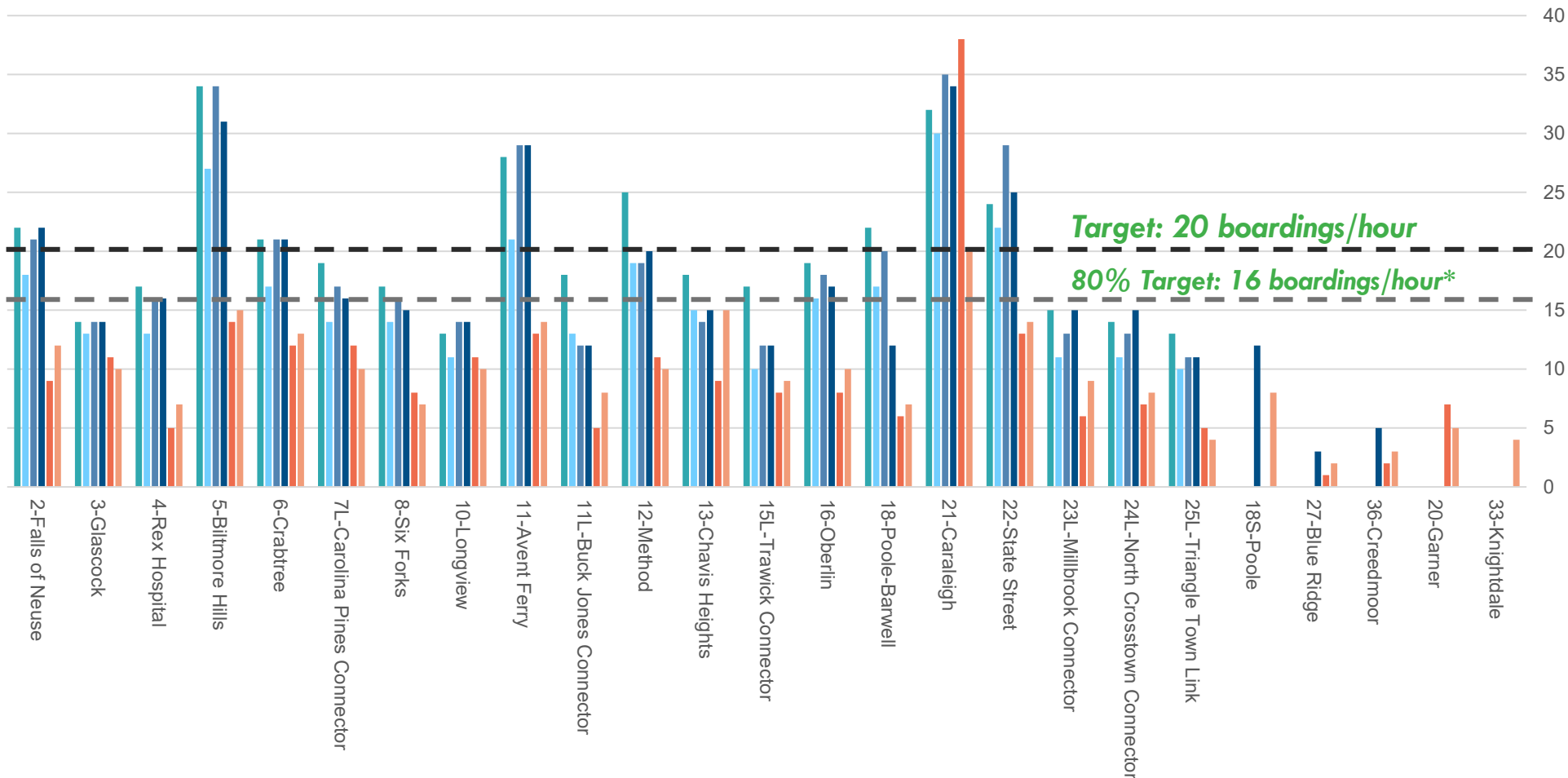
## Local Bus Routes

- 2 Falls of Neuse
- 3 Glascock
- 4 Rex Hospital
- 5 Biltmore Hills
- 6 Crabtree
- 7L Carolina Pines
- 8 Six Forks
- 10 Longview
- 11 Avent Ferry
- 11L Buck Jones
- 12 Method
- 13 Chavis Heights
- 15L Trawick Connector
- 16 Oberlin
- 18 Poole Barwell
- **18S Poole**
- **20 Garner**
- 21 Caraleigh
- 22 State Street
- 23L Millbrook
- 24L North Crosstown Connector
- 25L Triangle Town Link
- **27 Blue Ridge**
- **33 Knightdale**
- **36 Creedmore**

# Local Bus Routes

BOARDINGS PER REVENUE HR (APRIL – WEEKDAY)

■ 2016 ■ 2017 ■ 2018 ■ 2019 ■ 2020 ■ 2021



Target: 20 boardings/hour

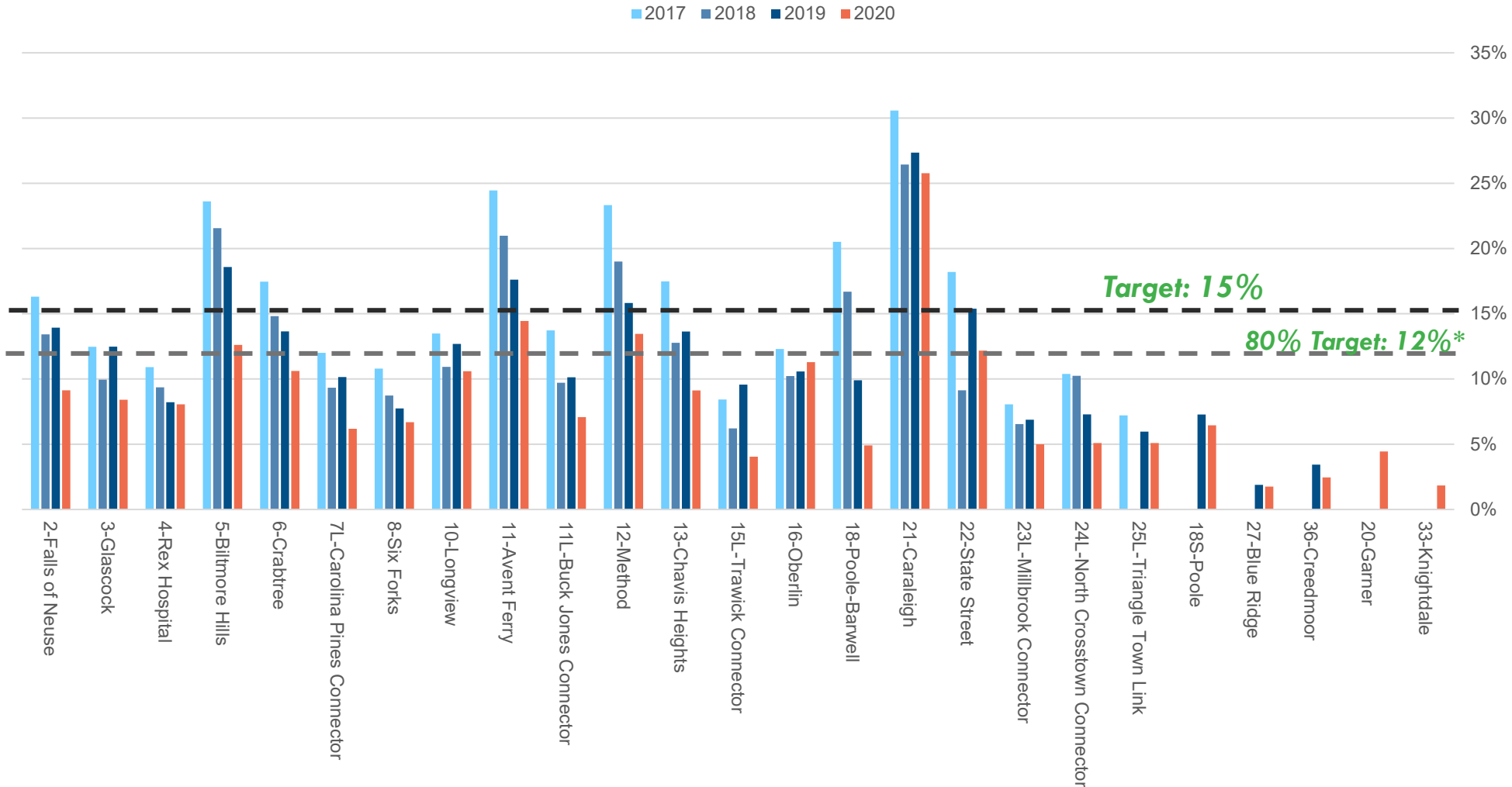
80% Target: 16 boardings/hour\*

## Local Bus Routes

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# Local Bus Routes

FAREBOX RECOVERY RATIO (FY)



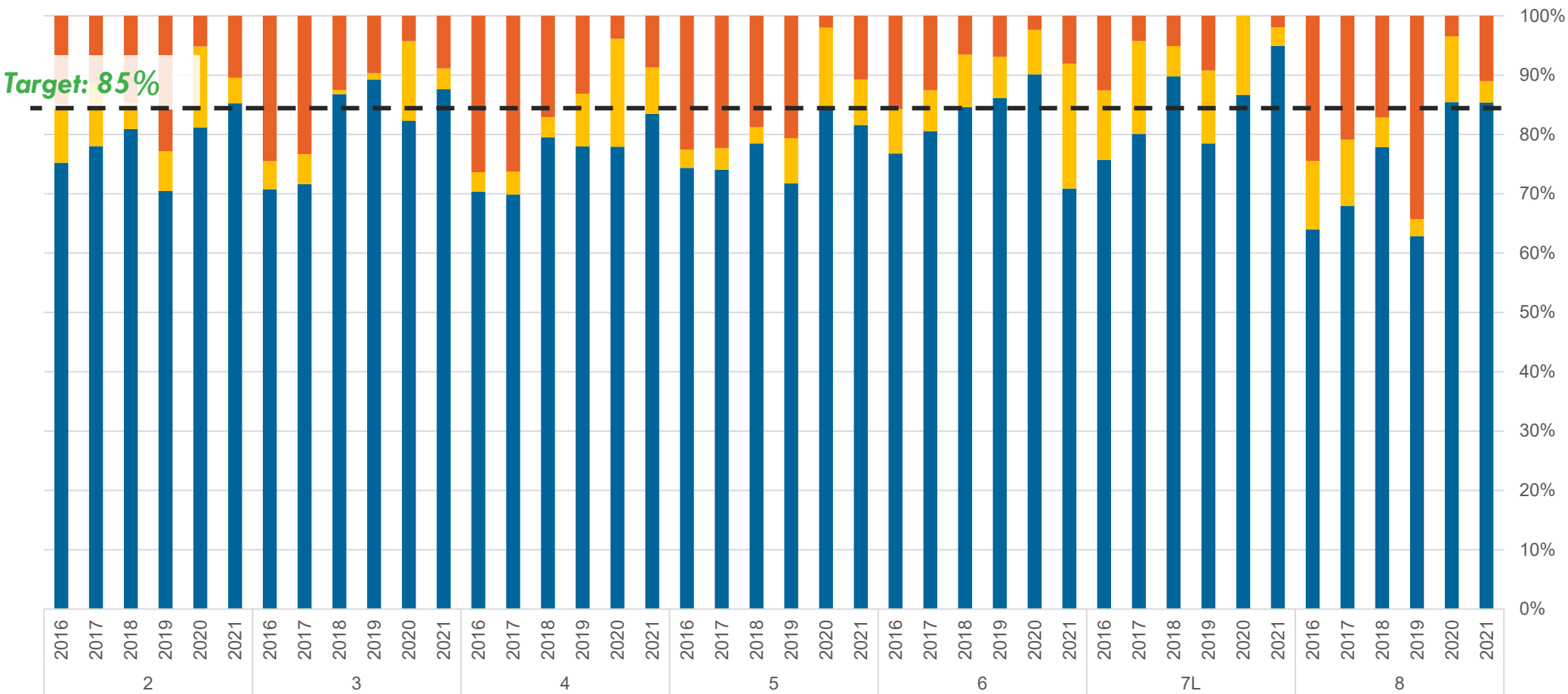
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- 23L Millbrook
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- 25L Triangle Town Link
- **27 Blue Ridge**
- **33 Knightdale**
- **36 Creedmore**

# Local Bus Routes (Part 1)

ON-TIME PERFORMANCE (APRIL - WEEKDAY)

■ On-Time ■ Early ■ Late



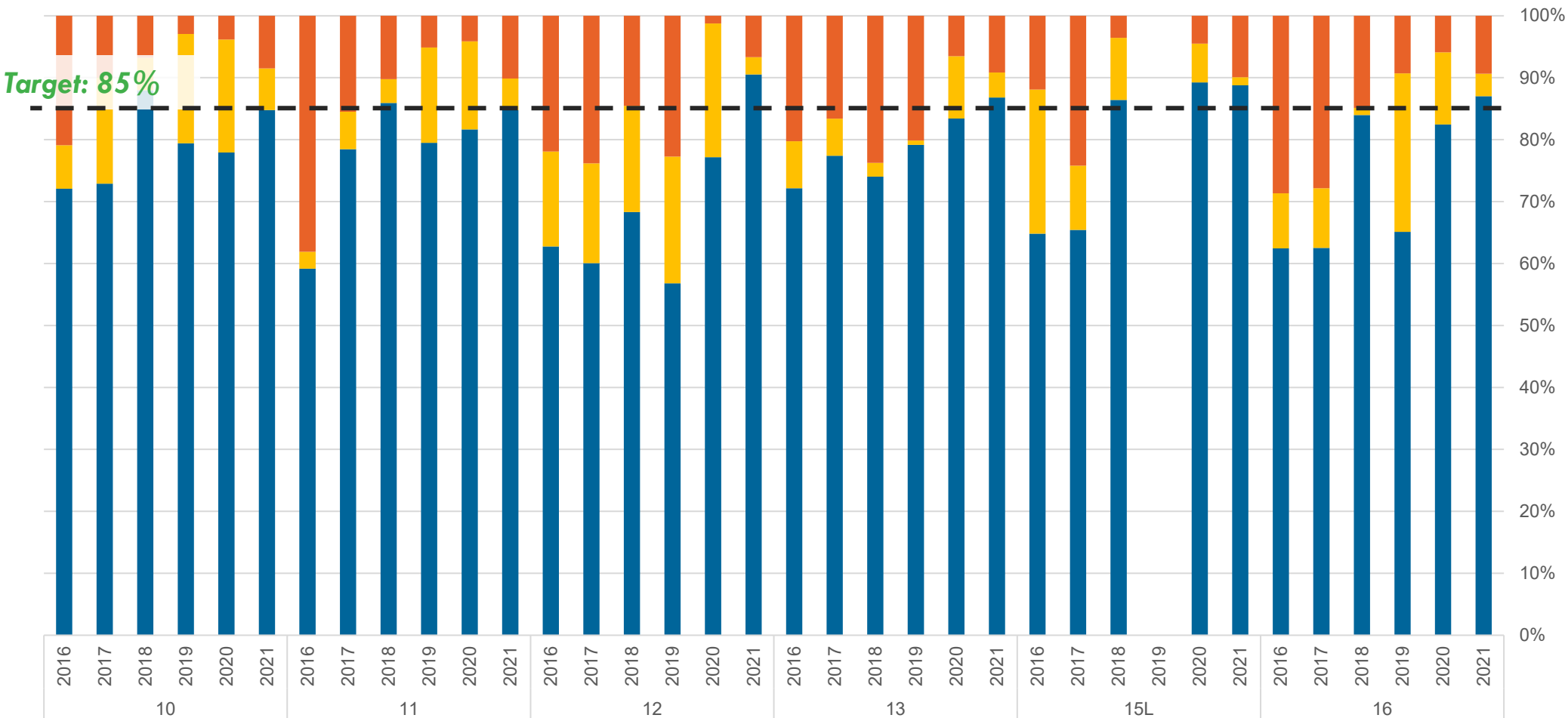
## Local Bus Routes

- 2 Falls of Neuse
- 3 Glascock
- 4 Rex Hospital
- 5 Biltmore Hills
- 6 Crabtree
- 7L Carolina Pines
- 8 Six Forks

# Local Bus Routes (Part 2)

ON-TIME PERFORMANCE (APRIL - WEEKDAY)

■ On-Time ■ Early ■ Late



## Local Bus Routes

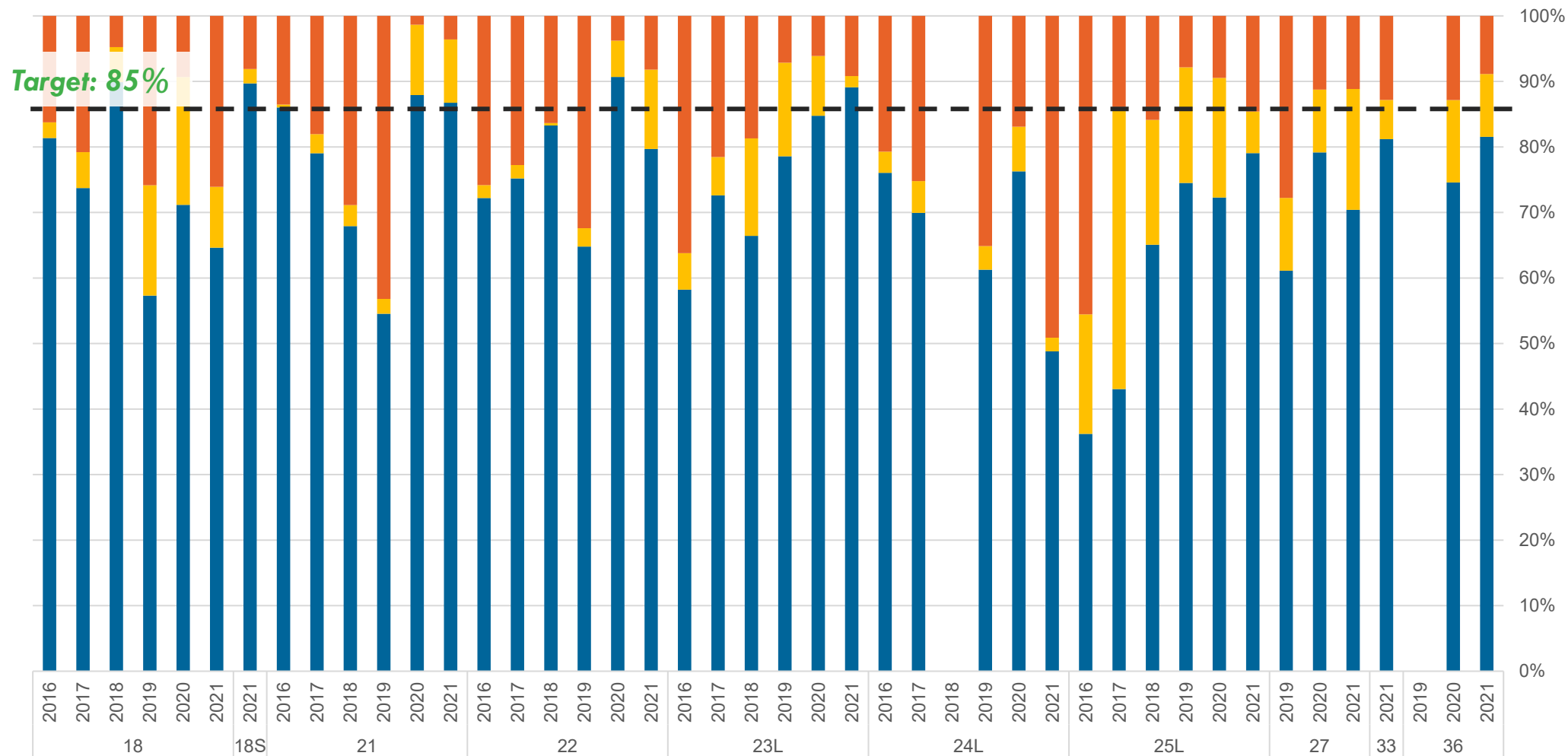
- 10 Longview
- 11 Avent Ferry
- 11L Buck Jones
- 12 Method
- 13 Chavis Heights Connector
- 15L Trawick
- 16 Oberlin



# Local Bus Routes (Part 3)

ON-TIME PERFORMANCE (APRIL - WEEKDAY)

■ On-Time ■ Early ■ Late



- ### Local Bus Routes
- 18 Poole Barwell
  - **18S Poole**
  - **20 Garner**
  - 21 Caraleigh
  - 22 State Street
  - 23L Millbrook
  - 24L North Crosstown Connector
  - 25L Triangle Town Link
  - **27 Blue Ridge**
  - **33 Knightdale**
  - **36 Creedmore**

# Community Bus Routes

## PERFORMANCE EVALUATION

There are 10 Wake Transit Plan funded Community Routes. These routes are listed in the subsequent pages, together with graphs of performance by route against the Wake Transit Plan standard.

### OPERATING COST PER PASSENGER BOARDING

The Operating Cost per Passenger Boarding for Community Routes was set at \$6.00. Given the measure is phased in, the 2021 standard (80% of target) is \$7.20:

- Most routes are at or below the target, especially routes that have been in operation for multiple years.
- The pandemic impacted performance on this metric. Several routes – especially newer ones – had poorer performance with increasing operating cost per boarding in 2020 and 2021.

### PASSENGER BOARDINGS PER REVENUE HOUR

The Passenger Boardings per Revenue Standard for Community Routes was set at 10 riders per revenue hour (all day standard). The 80% target is 8 riders per hour:

- Most routes did not meet that standard, both prior and during the pandemic. There were a handful of exceptions, including Routes GC5, 17 and the Wake Forest Loop).
- Ridership on several routes rebounded in 2021, returning to (or being close to) pre-pandemic levels.
- Routes implemented between 2019 and 2021 had low boardings per revenue hour.

### FAREBOX RECOVERY

The Wake Transit Plan set a Farebox Recovery Ratio metric of 10% with the current standard at 80% of the target, or an 8% farebox recovery ratio. However, fares were suspended for all routes due to the COVID pandemic. Additionally, there was limited

data available regarding farebox recovery. As a result, there is no farebox recovery analysis for Community Routes available.

### ON-TIME PERFORMANCE

The on-time performance sets the expectation that Community Routes meet the standard 85% of the time. No routes consistently met the Wake Bus Plan on-time performance standard and most routes saw an erosion of on-time performance in 2020 and 2021.

## KEY FINDINGS

- Community Routes struggled to meet their performance standards. While the pandemic partially explains some of the challenges, as a category these routes- at least in terms of the performance measures used - suffered from low productivity, poor on-time performance and high costs.
- Community Routes cost twice (or more) as much as local and frequent bus routes in terms of the cost per boarding. Some routes might be candidates for microtransit or on-demand type of services.

# Community Routes

No.	Name	Status	Performance Status
1	Maynard	Mature	Under-Performing
3	Harrison	Mature	Under-Performing
4	High House	Mature	Under-Performing
5	Kildaire	Mature	Under-Performing
6	Buck Jones	Mature	Under-Performing
7	<b>Weston</b>	<b>New</b>	Under-Performing
8	<b>CPX</b>	<b>New</b>	Under-Performing
WFL	Wake Forest Loop	Mature	Under-Performing
17	<b>Rock Quarry</b>	<b>New</b>	Under-Performing
26	<b>Edwards Mill</b>	<b>New</b>	Under-Performing

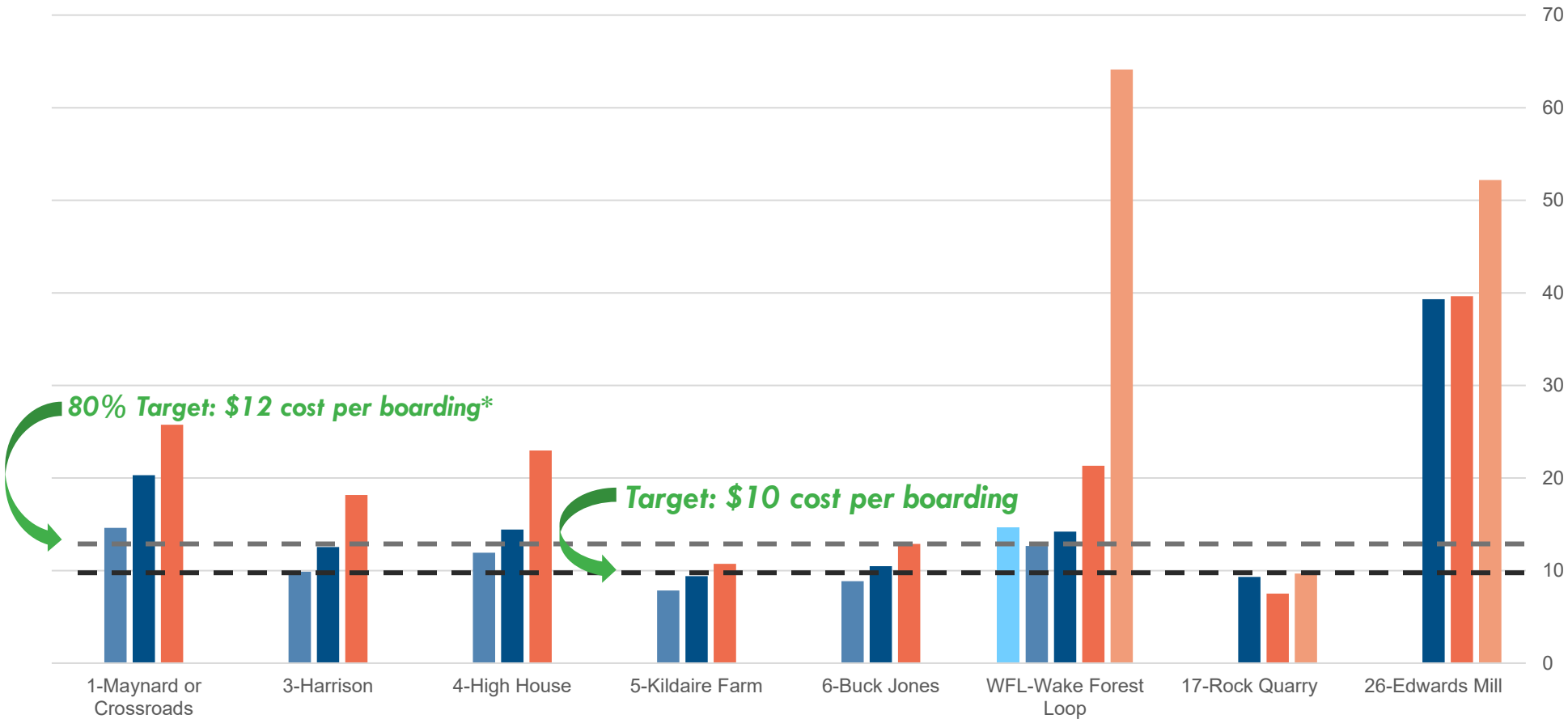
## Notes:

- Community routes include a combination of “new” and “mature” mature routes.
- **New routes were evaluated against the 80% standard, while mature routes were evaluated against the full standard.**
- Mature routes included routes operating before 2016 with WTP funded investments relate to span and frequency improvements or minor route alignment changes.
- Per the Wake Transit Plan Service Standards and Performance Guidelines, under-performing routes are defined as routes that fall below the minimum standards for three or more performance measures for a period of three or more consecutive quarters. For purposes of this evaluation, which uses a single annual data point, routes are considered underperforming if they under perform for three or more measures for at least three years.

# Community Bus Routes

OPERATING COST PER BOARDING (FY)

2017 2018 2019 2020 2021



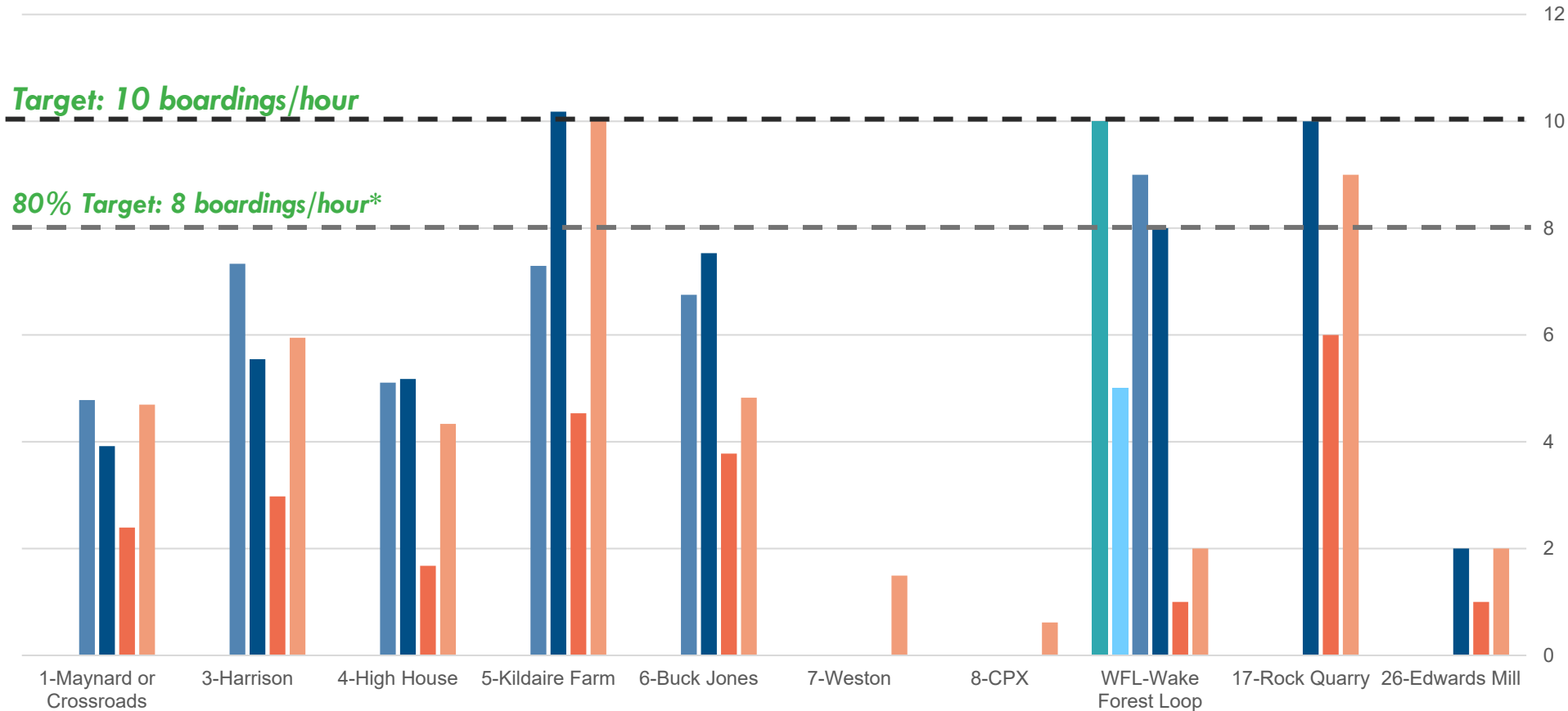
## Community Bus Routes

- 1 Maynard/ Crossroads
- 3 Harrison
- 4 High House
- 5 Kildaire Farms
- 6 Buck Jones
- 7 Weston
- 8 Cary Parkway
- 62 Wake Forest Loop (WFL)
- 17 Rock Quarry
- 26 Edwards Mill

# Community Bus Routes

BOARDINGS PER REVENUE HR (APRIL - WEEKDAY)

2016 2017 2018 2019 2020 2021



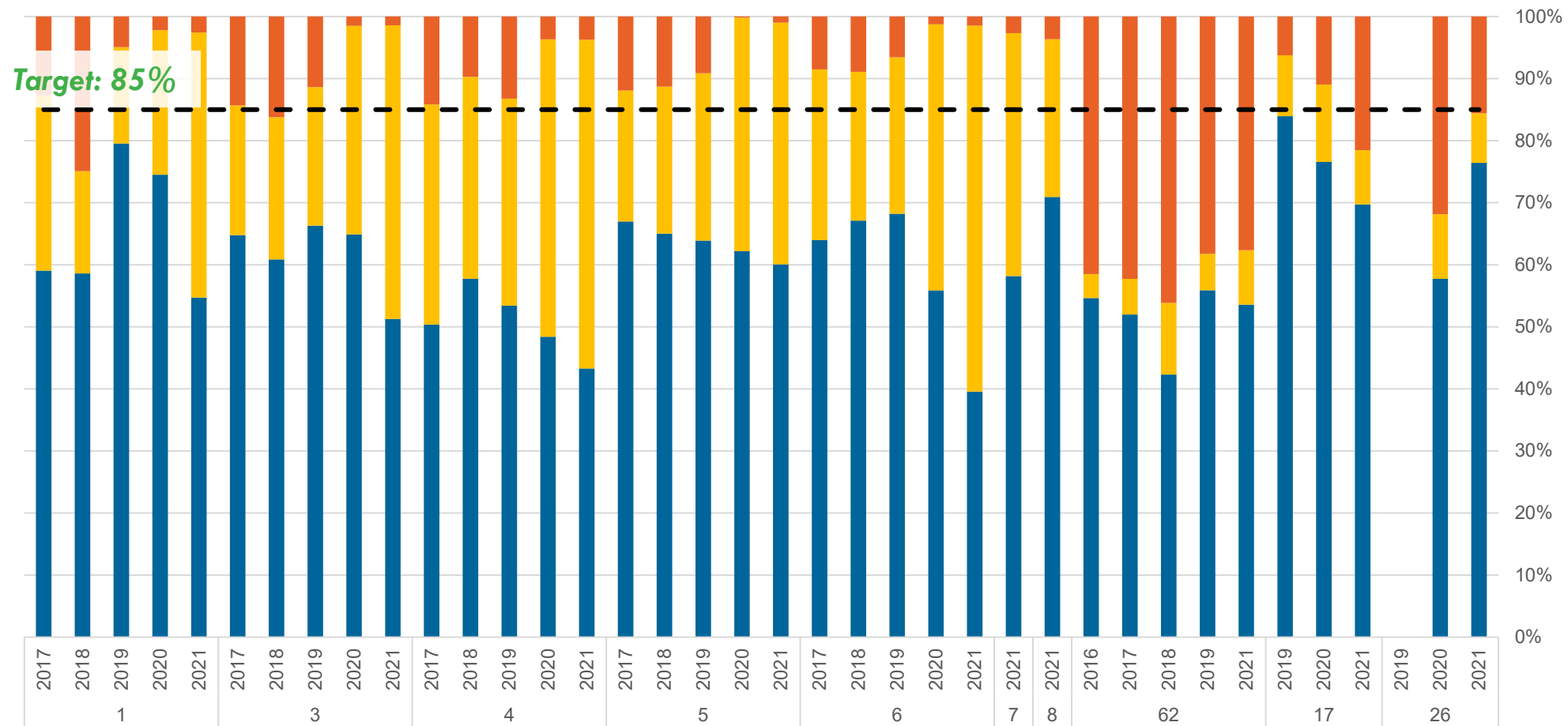
## Community Bus Routes

- 1 Maynard/ Crossroads
- 3 Harrison
- 4 High House
- 5 Kildaire Farms
- 6 Buck Jones
- **7 Weston**
- **8 Cary Parkway**
- 62 Wake Forest Loop (WFL)
- **17 Rock Quarry**
- **26 Edwards Mill**

# Community Bus Routes

ON-TIME PERFORMANCE (APRIL - WEEKDAY)

On-time Early Late Standard



- Community Bus Routes**
- 1 Maynard/ Crossroads
  - 3 Harrison
  - 4 High House
  - 5 Kildaire Farms
  - 6 Buck Jones
  - **7 Weston**
  - **8 Cary Parkway**
  - 62 Wake Forest Loop (WFL)
  - **17 Rock Quarry**
  - **26 Edwards Mill**

# Core Regional Bus Routes

## PERFORMANCE EVALUATION

There are nine Wake Transit Plan funded Core Regional Routes, but three routes were suspended in 2020 due to the COVID-19 pandemic.

Core Regional Routes are listed in the subsequent pages, together with graphs of performance by route against the Wake Transit Plan standard.

### OPERATING COST PER PASSENGER BOARDING

The Operating Cost per Passenger Boarding for Core Regional Routes was set at \$10.00. The phased target (80%) is \$7.20:

- With a handful of exceptions, most routes did not meet the operating cost per boarding target, but several routes were close to it, especially before the pandemic.

### PASSENGER BOARDINGS PER TRIP

Core Regional Routes measure Passenger Boardings in terms of per revenue trip (rather than per revenue hour) because service is limited to specific days and times. The standard for core regional bus routes was set at 20 riders per revenue trip and the 80% target is 16 riders per revenue trip:

- Most routes fell short of the standard for all years with a handful of exceptions, including Routes 400, 405 and 805.
- None of the routes met the standard in 2021 and routes implemented in 2020 had low boardings.

### FAREBOX RECOVERY

The Wake Transit Plan set a Farebox Recovery Ratio metric of 20% with the current standard at 80% of the target, or a 16% farebox recovery ratio. However, fares were suspended for all routes due to the COVID pandemic. As a result, the analysis reflects 2017 - 2019:

- Most routes failed to meet the farebox recovery standard for all years. There were a handful of exceptions (Routes 405, 700 and 805) where routes met the standard for at least one year.

### ON-TIME PERFORMANCE

The on-time performance sets the expectation that routes meet the standard 85% of the time. Most routes consistently met the on-time performance standard, and all routes had strong reliability during the pandemic.

## KEY FINDINGS

- Core Regional Routes struggled to meet their performance standards. While the pandemic partially explains some of the challenges, as a category these routes suffered from low productivity, poor on-time performance and high costs.
- The Core Regional Routes with the strongest performance included some of the legacy routes providing connections between the region's strongest activity centers, such as Durham to Chapel Hill and Carrboro, and Durham to the Regional Transit Center.
- Some of the standards for the Core Regional Routes are likely set too high. Two metrics - farebox recovery rate and boardings per trip – are set either set at the same rate as frequent bus routes and/or higher for express routes. In addition, even the strongest routes failed to meet these standards, suggesting they may be a need to adjust the targets.

# Core Regional Bus Routes

No.	Name	Status	Performance Status
100	Raleigh-Airport-RTC	Mature	Under-Performing
105	Raleigh-RTC	Mature	Under-Performing
300	RTC-Cary-Raleigh	Mature	Under-Performing
301	Cary-Raleigh	Mature	Under-Performing
305	Lake Pine-Cary-Raleigh	Mature	Under-Performing
<b>310</b>	<b>Perimeter Park-Wake Tech RTP</b>	<b>New</b>	Under-Performing
311	Apex-RTC	Mature	Under-Performing
400	Durham-Chapel Hill	Mature	Under-Performing
405	Durham-Chapel Hill-Carrboro	Mature	<b>Meets Standard</b>
420	Hillsborough-Chapel Hill	Mature	Under-Performing
700	Durham-RTC	Mature	Under-Performing
800	Chapel Hill-Southpoint-RTC	Mature	Under-Performing
805	Chapel Hill-Woodcroft-RTC	Mature	Under-Performing

## Notes:

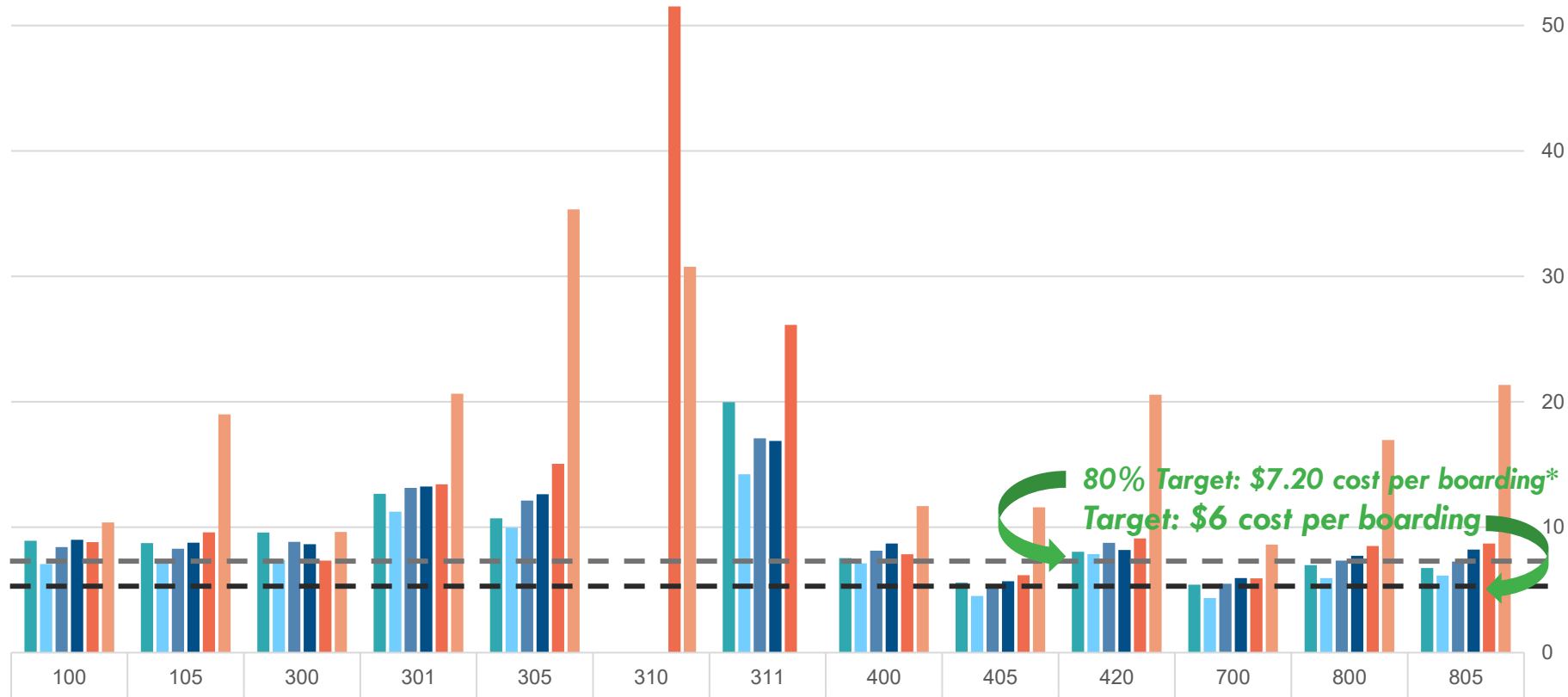
- Core Regional routes include a combination of “new” and “mature” mature routes.
- **New routes were evaluated against the 80% standard, while mature routes were evaluated against the full standard.**
- Mature routes included routes operating before 2016 with WTP funded investments relate to span and frequency improvements or minor route alignment changes.
- Per the Wake Transit Plan Service Standards and Performance Guidelines, under-performing routes are defined as routes that fall below the minimum standards for three or more performance measures for a period of three or more consecutive quarters. For purposes of this evaluation, which uses a single annual data point, routes are considered underperforming if they under perform for three or more measures for at least three years.



# Core Regional Bus Routes

OPERATING COST PER BOARDING (FY)

■ 2016 ■ 2017 ■ 2018 ■ 2019 ■ 2020 ■ 2021



## Regional Bus Routes

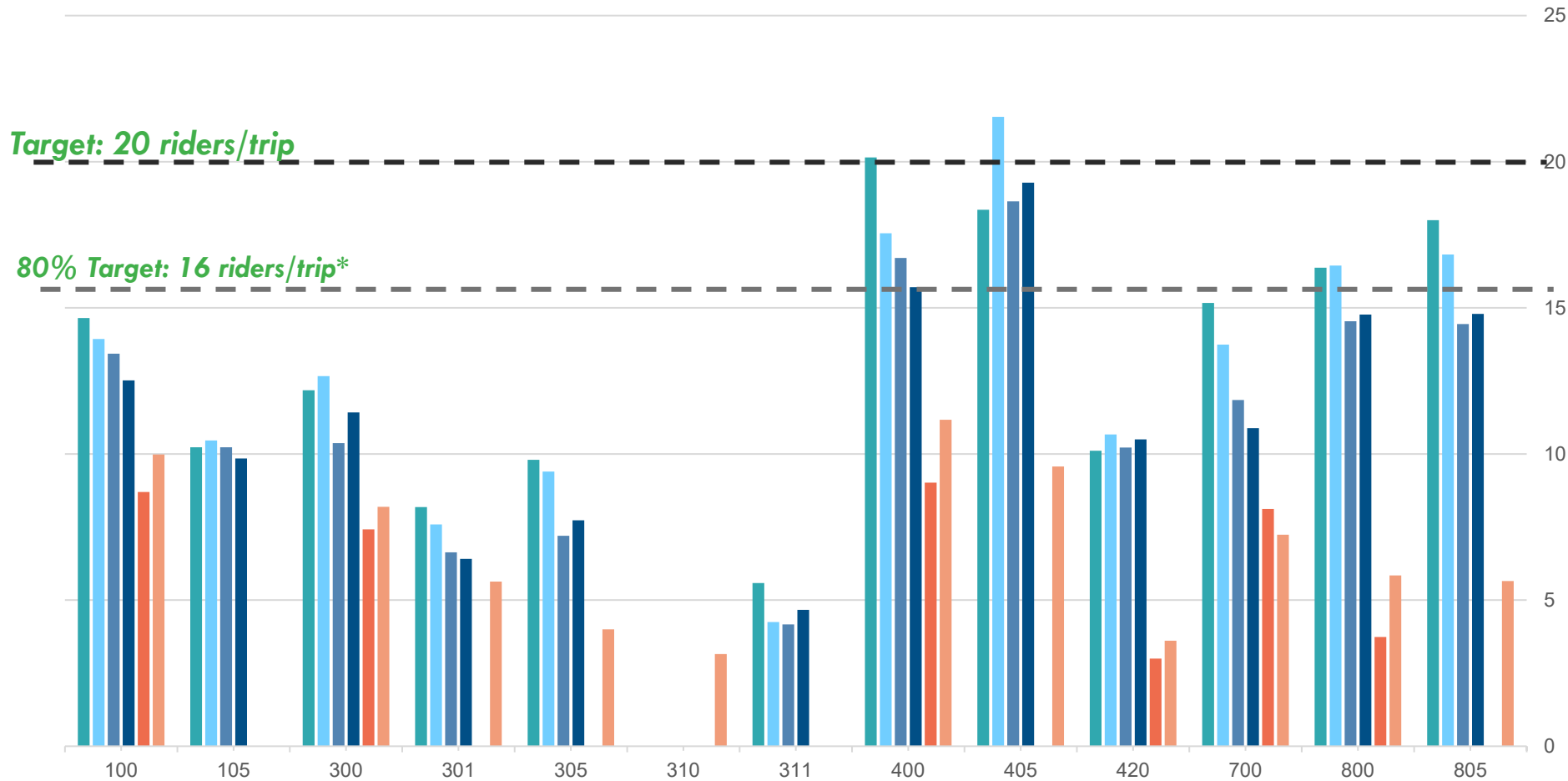
- 100 Raleigh-Airport-RTC
- 105\* Raleigh-RTC
- 300 RTC-Cary-Raleigh
- 301\* Cary-Raleigh
- 305 Lake Pine-Cary –Raleigh
- 310\* Perimeter Park-Wake Tech RTP
- 311\* Apex-RTC
- 400 Durham-Chapel Hill
- 405 Durham-Chapel Hill-Carrboro
- 420\* Hillsborough-Chapel Hill
- 700 Durham-RTC
- 800\* Chapel Hill-Southpoint-RTC
- 805\* Chapel Hill-Woodcroft-RTC

\*Several routes suspended or reduced service

# Core Regional Bus Routes

BOARDINGS PER REVENUE TRIP (APRIL - WEEKDAY)

■ 2016 ■ 2017 ■ 2018 ■ 2019 ■ 2020 ■ 2021



## Regional Bus Routes

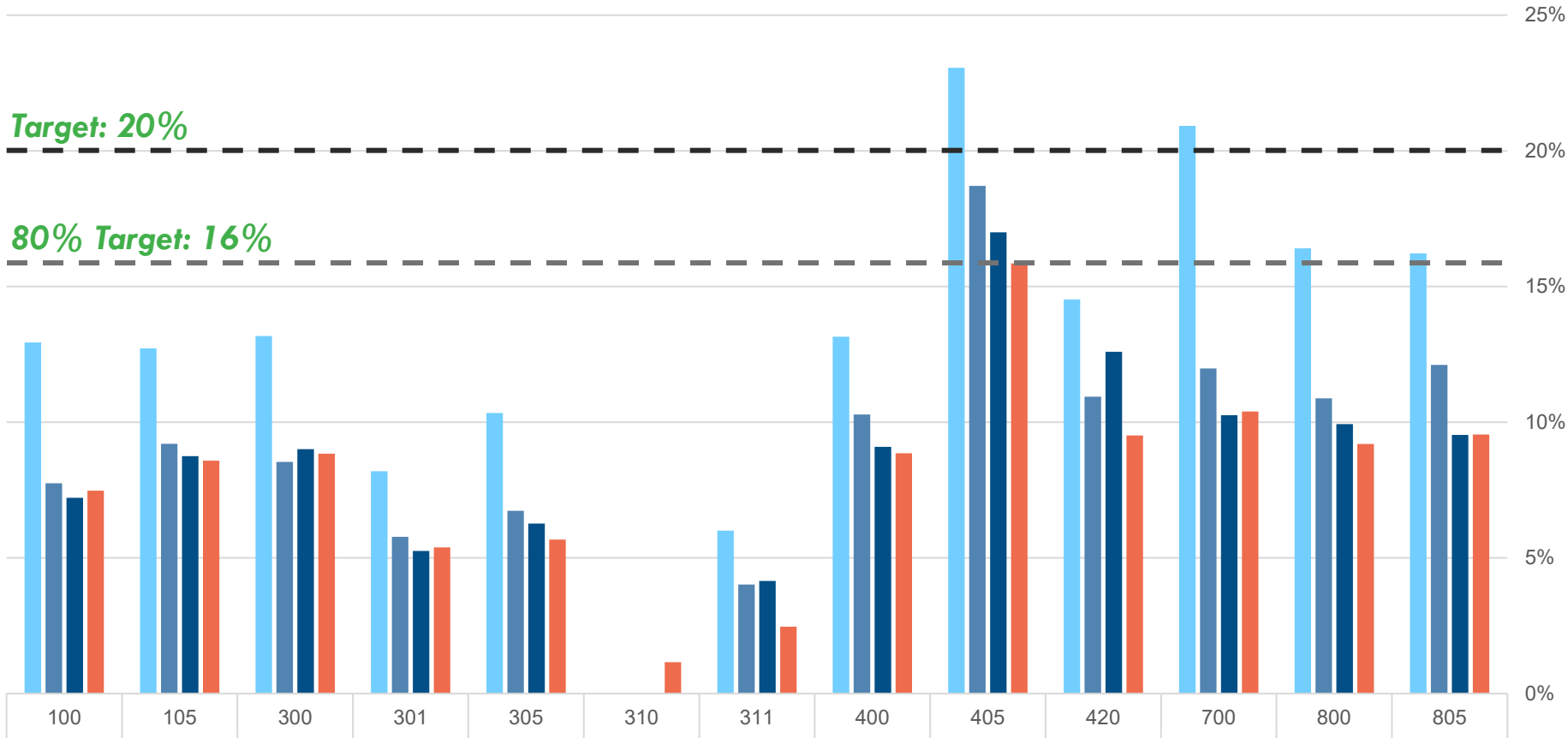
- 100 Raleigh-Airport-RTC
- 105\* Raleigh-RTC
- 300 RTC-Cary-Raleigh
- 301\* Cary-Raleigh
- 305 Lake Pine-Cary –Raleigh
- 310\* Perimeter Park-Wake Tech RTP
- 311\* Apex-RTC
- 400 Durham-Chapel Hill
- 405 Durham-Chapel Hill-Carrboro
- 420\* Hillsborough-Chapel Hill
- 700 Durham-RTC
- 800\* Chapel Hill-Southpoint-RTC
- 805\* Chapel Hill-Woodcroft-RTC

*\*Several routes suspended or reduced service*

# Core Regional Bus Routes

FAREBOX RECOVERY RATIO (FY)

■ 2017 ■ 2018 ■ 2019 ■ 2020



Target: 20%

80% Target: 16%

## Regional Bus Routes

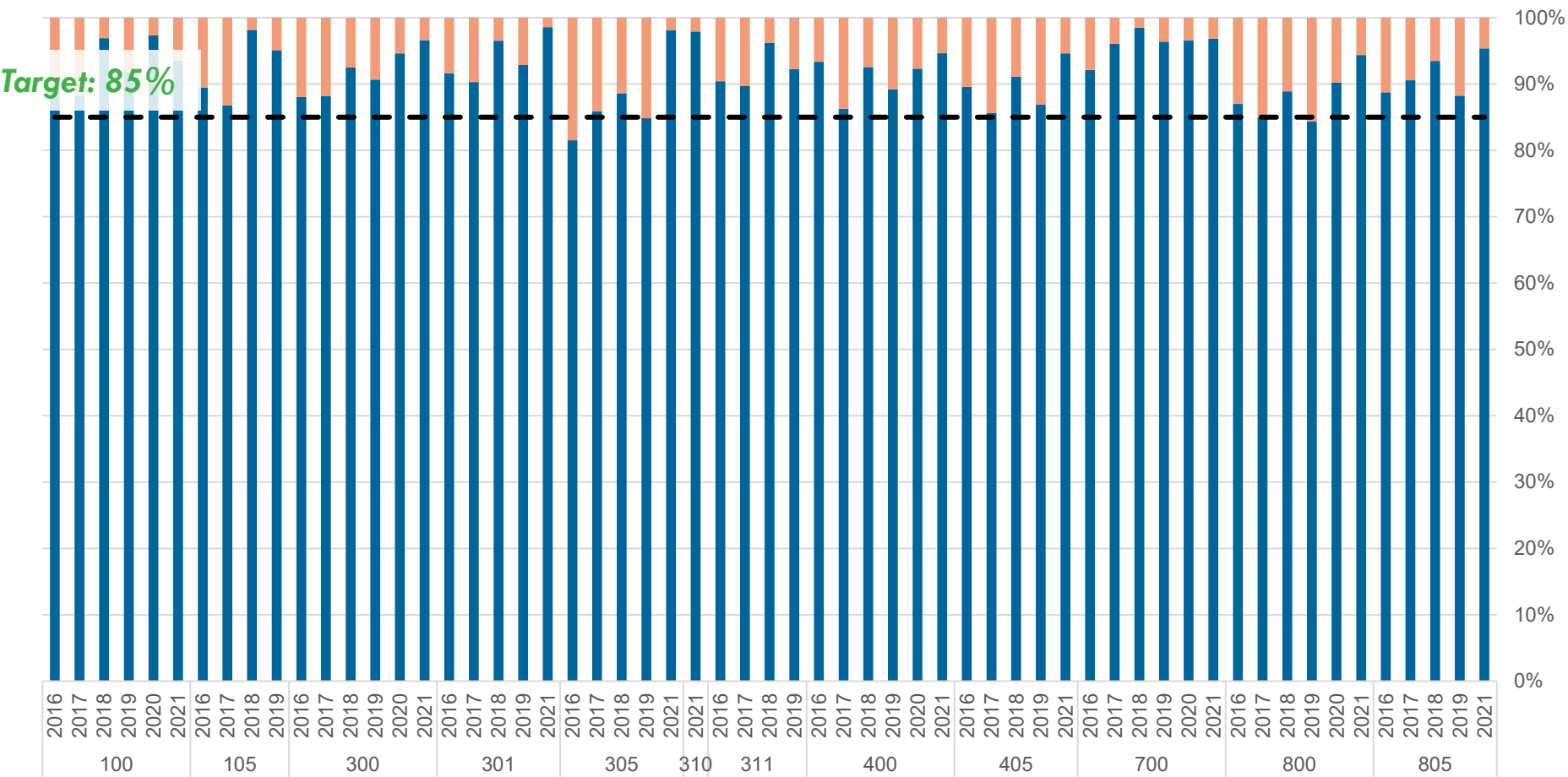
- 100 Raleigh-Airport-RTC
- 105\* Raleigh-RTC
- 300 RTC-Cary-Raleigh
- 301\* Cary-Raleigh
- 305 Lake Pine-Cary –Raleigh
- 310\* Perimeter Park-Wake Tech RTP
- 311\* Apex-RTC
- 400 Durham-Chapel Hill
- 405 Durham-Chapel Hill-Carrboro
- 420\* Hillsborough-Chapel Hill
- 700 Durham-RTC
- 800\* Chapel Hill-Southpoint-RTC
- 805\* Chapel Hill-Woodcroft-RTC

\*Several routes suspended or reduced service

# Core Regional Bus Routes

ON-TIME PERFORMANCE (APRIL - WEEKDAY)

On-time Early or Late Standard



## Regional Bus Routes

- 100 Raleigh-Airport-RTC
- 105\* Raleigh-RTC
- 300 RTC-Cary-Raleigh
- 301\* Cary-Raleigh
- 305 Lake Pine-Cary –Raleigh
- 310\* Perimeter Park-Wake Tech RTP
- 311\* Apex-RTC
- 400 Durham-Chapel Hill
- 405 Durham-Chapel Hill-Carrboro
- 420\* Hillsborough-Chapel Hill
- 700 Durham-RTC
- 800\* Chapel Hill-Southpoint-RTC
- 805\* Chapel Hill-Woodcroft-RTC

\*Several routes suspended or reduced service

# Express Bus Routes

## PERFORMANCE EVALUATION

There are 11 Wake Transit Plan funded Express Routes. One route was suspended in 2020 due to the COVID-19 pandemic, the NRX North Raleigh Express.

Express Routes are listed in the subsequent pages, together with graphs of performance by route against the Wake Transit Plan standard.

### OPERATING COST PER PASSENGER BOARDING

The Operating Cost per Passenger Boarding for Express Routes was set at \$10.00. The phased target (80%) is \$7.20:

- Most express routes met the operating cost per boarding standard ?

### PASSENGER BOARDINGS PER TRIP

Express Routes measure Passenger Boardings in terms of per revenue trip (rather than per revenue hour) because service is limited to specific days and times. The standard for Express Routes was set at 10 riders per revenue trip and the 80% target is 8 riders per revenue trip:

- Most Express Routes met the boarding per trip standard and would have met the full target. An exception is the WRX Wake Forest Raleigh Express, which did not meet the standard any year.

### FAREBOX RECOVERY

The Wake Transit Plan set a Farebox Recovery Rate metric of 15% for Express Routes. The current standard is set at 80% of the target, or a 12%. However, fares were suspended for all routes due to the COVID pandemic. As a result, the analysis reflects 2016 - 2019:

- A handful of the Express Routes met the farebox recovery standard in 2017 and stayed near this standard through 2019.

- Routes implemented in more recent years, however, such as Route 55X, 70X and 40X did not meet the farebox recovery standard.

### ON-TIME PERFORMANCE

The on-time performance standard sets the expectation that routes meet the standard 85% of the time. Prior to the pandemic, most routes met or surpassed the standard.

## KEY FINDINGS

- Express Routes showed mixed results with regards to the Wake Transit Plan performance standards. Performance varied by metric and by duration of route operations.
- For example, most Express Routes met the operating cost per passenger boarding and boardings per revenue trip metrics but did not achieve the farebox recovery ratio. This suggests that the farebox recovery ratio may be set too high and is unrealistic given the costs associated with delivering peak only, longer distant routes.
- Express Routes with a longer operating history, such as the CRX, DRX, FRX and ODX consistently met the standards, while the newer routes (WRX and ACX) struggled to meet the standards.

# Express Bus Routes

No.	Name	Status	Performance Status
CRX	Chapel Hill-Raleigh Express	Mature	<b><i>Meets/Exceeds Standard</i></b>
DRX	Durham-Raleigh Express	Mature	<b><i>Meets/Exceeds Standard</i></b>
FRX	Fuquay-Varina-Raleigh Express	Mature	Under-Performing
NRX	North Raleigh Express	Mature	Under-Performing
ODX	Orange-Durham Express	Mature	<b><i>Meets/Exceeds Standard</i></b>
RSX	Robertson Express	Mature	Under-Performing
WRX	Wake Forest-Raleigh Express	Mature	Under-Performing
ZWX	Zebulon-Wendell-Raleigh Express	Mature	Under-Performing
ACX	Cary Express	<b>New</b>	Under-Performing
401	Rolesville Express	<b>New</b>	Under-Performing
40X	Wake Tech Express	Mature	Under-Performing
55X	Poole Road Express	Mature	Under-Performing
70X	Brier Creek Express	Mature	Under-Performing

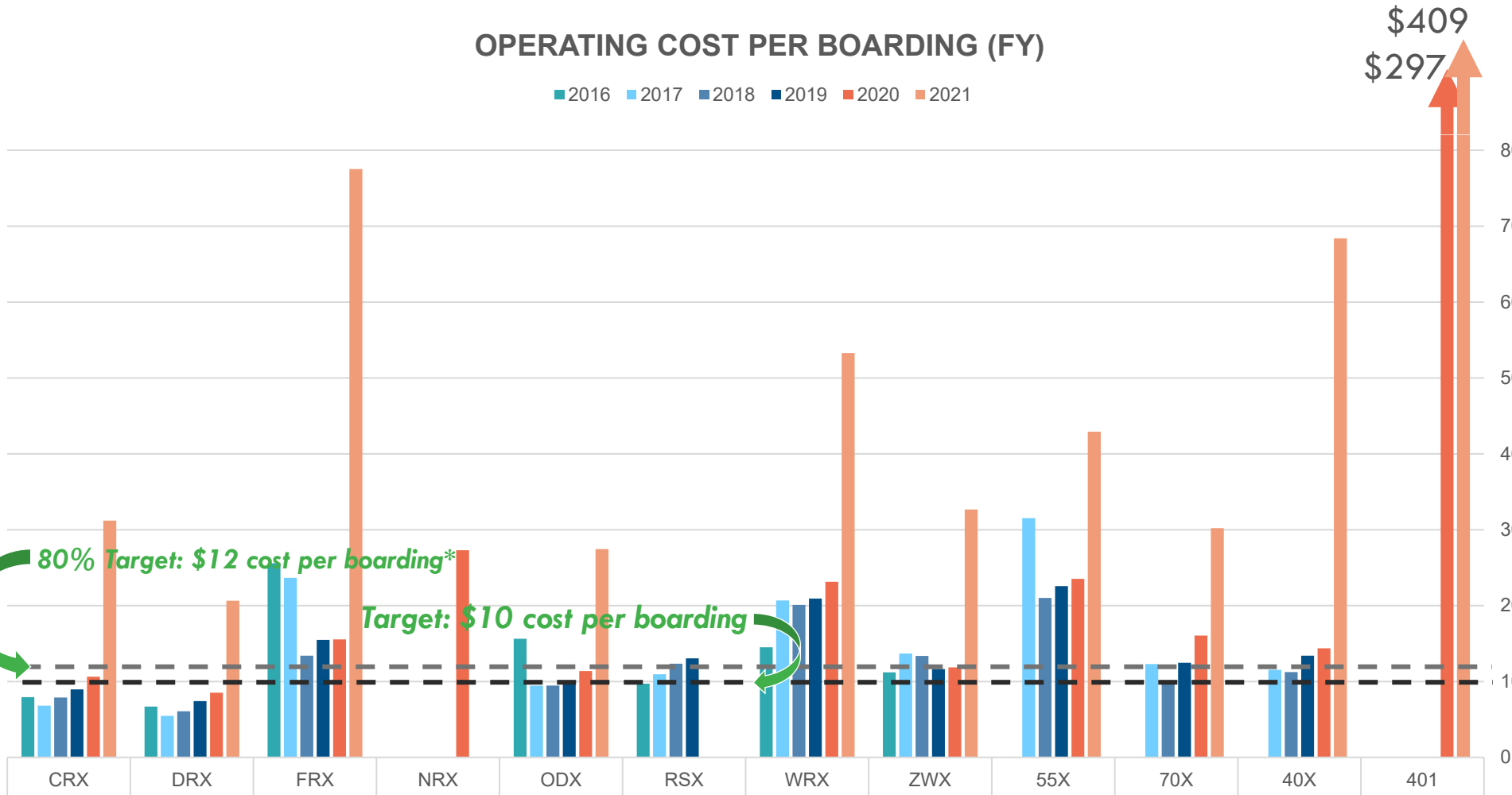
## Notes:

- Express routes include a combination of “new” and “mature” mature routes.
- New routes were evaluated against the 80% standard, while mature routes were evaluated against the full standard.**
- Mature routes included routes operating before 2016 with WTP funded investments relate to span and frequency improvements or minor route alignment changes.
- Per the Wake Transit Plan Service Standards and Performance Guidelines, under-performing routes are defined as routes that fall below the minimum standards for three or more performance measures for a period of three or more consecutive quarters. For purposes of this evaluation, which uses a single annual data point, routes are considered underperforming if they under perform for three or more measures for at least three years.

# Express Bus Routes

OPERATING COST PER BOARDING (FY)

2016 2017 2018 2019 2020 2021



**Express Bus Routes**

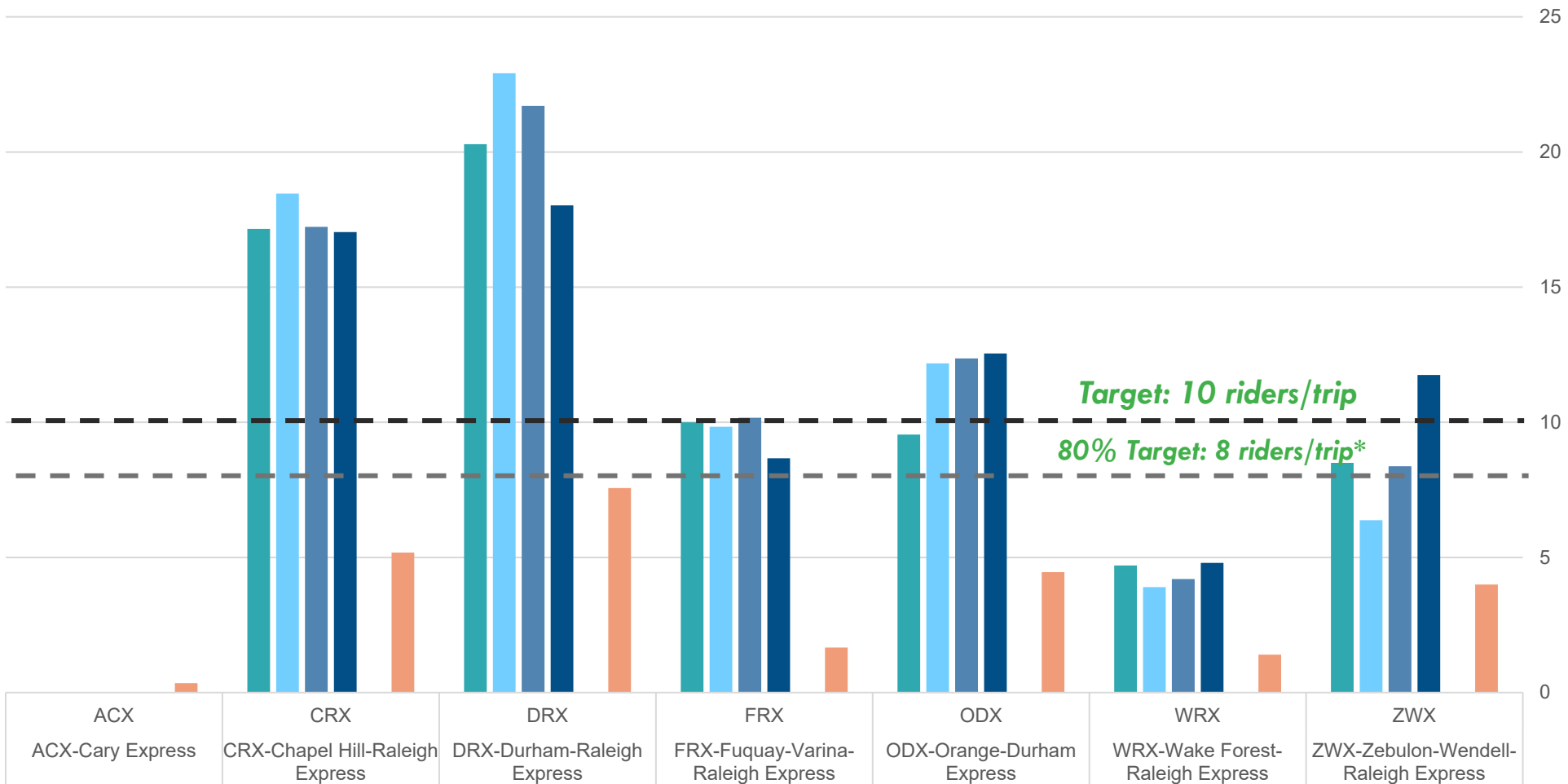
- ACX – Cary
- CRX\* - Chapel Hill Raleigh
- DRX\* - Durham-Raleigh
- FRX - Fuquay-Varina – Raleigh
- NRX\* North Raleigh Express
- ODX – Orange-Durham
- RSX Robertson Express
- WRX -Wake Forest - Raleigh
- ZWX - Zebulon-Wendell- Raleigh
- 55X Poole Road
- 70X Brier Creek
- 40X Wake Tech
- 401 Rolesville

*\*Several routes suspended or reduced service*

# Express Bus Routes

BOARDINGS PER REVENUE TRIP (APRIL - WEEKDAY)

■ 2016 ■ 2017 ■ 2018 ■ 2019 ■ 2020 ■ 2021



Target: 10 riders/trip  
80% Target: 8 riders/trip\*

## Express Bus Routes

- ACX – Cary
- CRX\* - Chapel Hill Raleigh
- DRX\* - Durham-Raleigh
- FRX - Fuquay-Varina – Raleigh
- NRX\* North Raleigh Express
- ODX – Orange-Durham
- RSX Robertson Express
- WRX -Wake Forest - Raleigh
- ZWX - Zebulon-Wendell-Raleigh
- 55X Poole Road
- 70X Brier Creek
- 40X Wake Tech
- 401 Rolesville

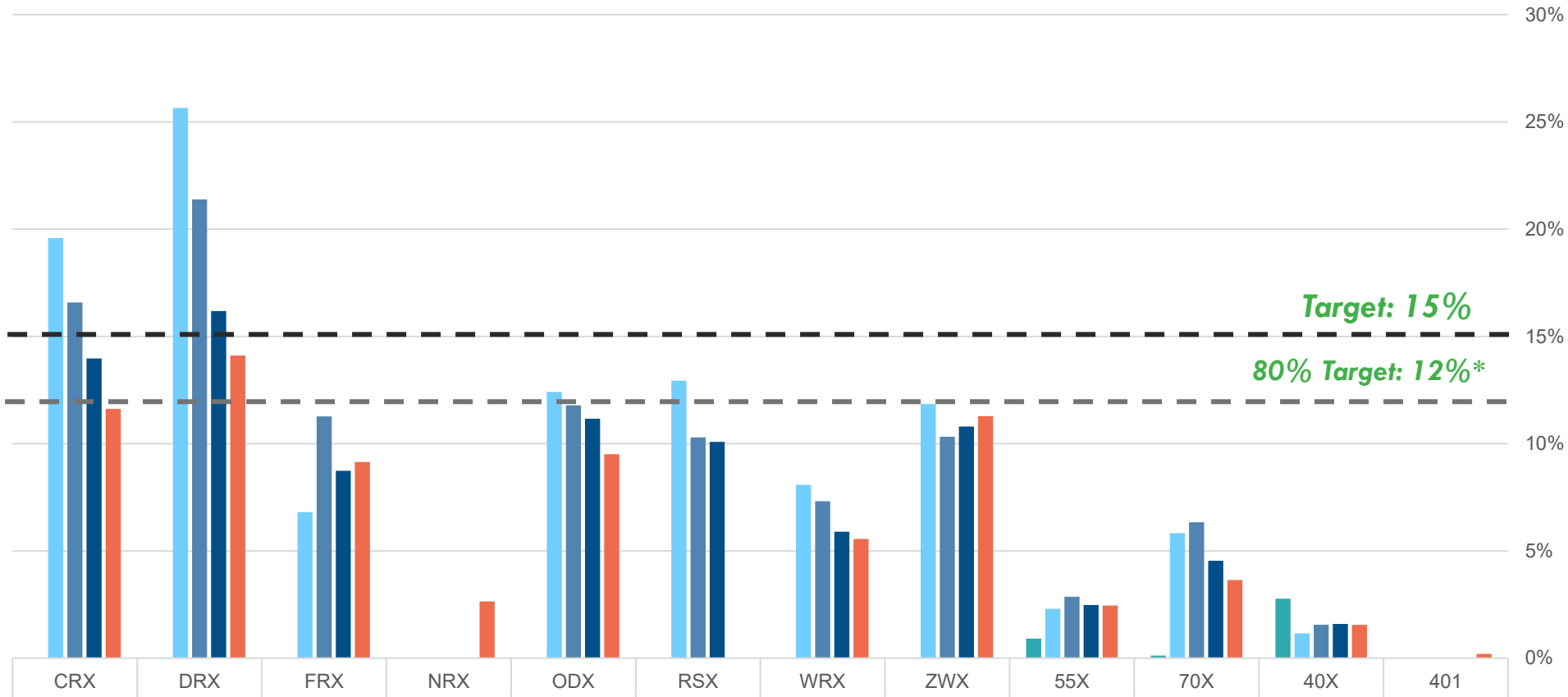
\*Several routes suspended or reduced service



# Express Bus Routes

FAREBOX RECOVERY RATIO (FY)

■ 2016 ■ 2017 ■ 2018 ■ 2019 ■ 2020



Target: 15%

80% Target: 12%\*

## Express Bus Routes

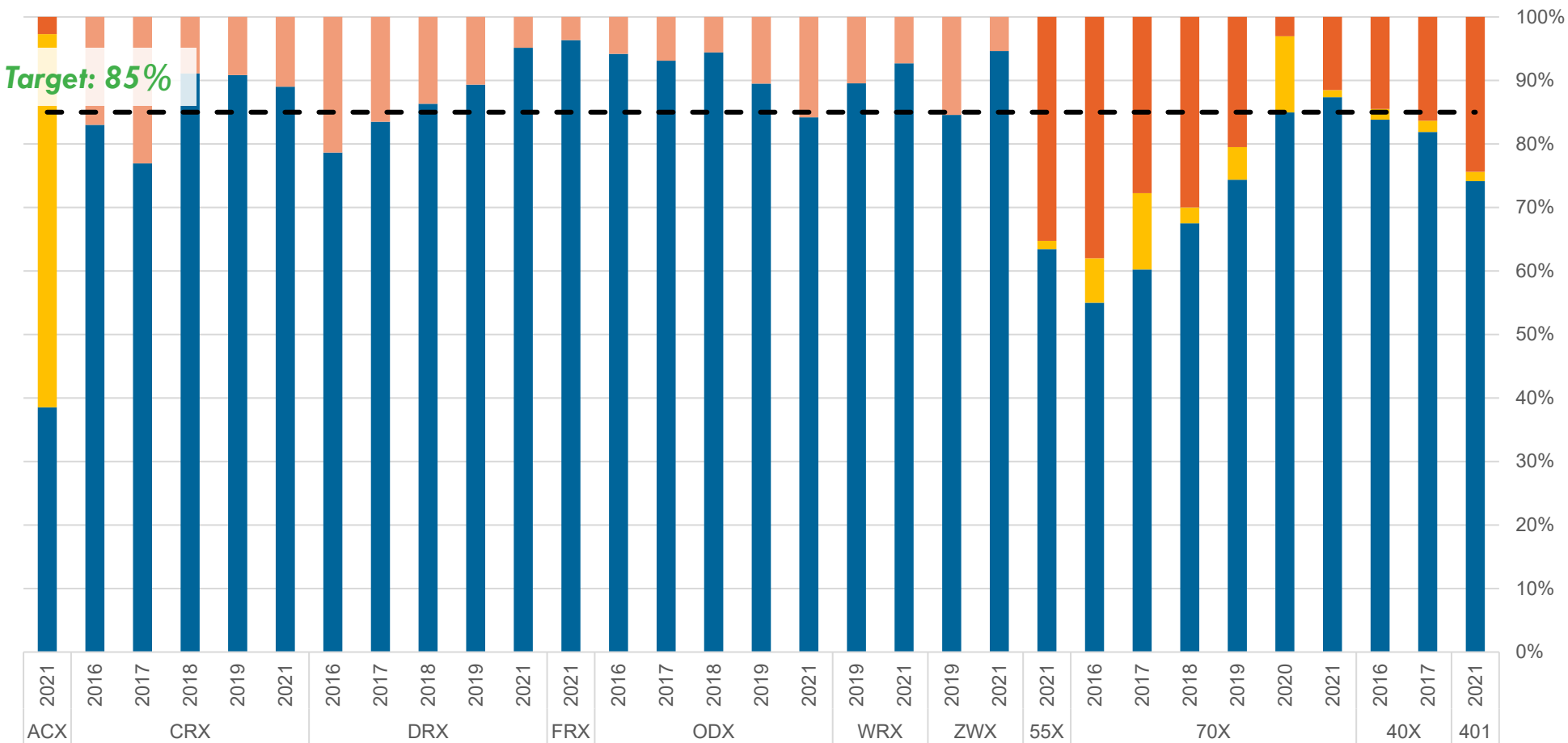
- ACX – Cary
- CRX\* - Chapel Hill Raleigh
- DRX\* - Durham-Raleigh
- FRX - Fuquay-Varina – Raleigh
- NRX\* North Raleigh Express
- ODX – Orange-Durham
- RSX Robertson Express
- WRX -Wake Forest - Raleigh
- ZWX - Zebulon-Wendell- Raleigh
- 55X Poole Road
- 70X Brier Creek
- 40X Wake Tech
- 401 Rolesville

\*Several routes suspended or reduced service

# Express Bus Routes

## ON-TIME PERFORMANCE (APRIL - WEEKDAY)

On-time Early Late Early or Late Standard



### Express Bus Routes

- ACX – Cary
- CRX\* - Chapel Hill Raleigh
- DRX\* - Durham-Raleigh
- FRX - Fuquay-Varina – Raleigh
- NRX\* North Raleigh Express
- ODX – Orange-Durham
- RSX Robertson Express
- WRX -Wake Forest - Raleigh
- ZWX - Zebulon-Wendell-Raleigh
- 55X Poole Road
- 70X Brier Creek
- 40X Wake Tech
- 401 Rolesville

\*Several routes suspended or reduced service

# **3 – Ideas for Updating Wake Transit Plan Service Standards and Performance Measures**

# Updating Service Standards and Performance Metrics

In addition to evaluating individual route performance, the study team also evaluated the evaluation process. The team considered four main questions:

- Is the Wake Transit Plan measuring the right things?
- Does the Plan have the right standards (or expectations)?
- Are the categories and definitions correctly set?
- Are there new industry trends or strategies to consider?

These four questions are broadly categorized into four sections, effective metrics, effective standards, categories and definitions and industry trends.

## EFFECTIVE METRICS

One of the fundamental questions about the Service Standards and Performance Metrics is if the framework uses the correct measures, or metrics. As discussed, the metrics were designed to capture route level performance and service quality. The metrics were also designed to be relatively easy to report. Reviewing the metrics with several years experience with implementation suggest:

- The performance metrics work well for the traditional fixed route bus services, like Frequent and Local Routes. Collectively, the four metrics offer a check on how the service is doing overall; they also facilitate comparison between routes and help reviewers understand performance within their individual route classifications. The metrics also facilitate understanding of individual routes that are succeeding, routes that may benefit from more investments; and routes that are struggling to meet standards and likely need further examination.
- However, for other service types, such as Core Regional and Express routes, which are more specialized services and oriented around specific markets, the metrics are less effective at capturing route strengths and weaknesses. In some cases, all routes struggle to meet the standards for some metrics, even if they succeed in others. This makes it more challenging to understand why or how some routes are succeeding

and some struggling.

- The evaluation process suggests that the Wake Transit Plan may wish to consider replacing or changing some metrics for specialized services like Express and Core Regional routes that would better identify different metrics for services designed to serve specific markets. Evaluating passenger boardings on a per trip basis, for example, helps to mitigate the potential challenges associated with a boardings per hour metric. But other standards, like cost per boarding and farebox recovery ratio, are less appropriate for routes that travel longer distances and have higher costs but carry fewer riders.
- Finally, the evaluation process demonstrated the challenges of evaluating routes based on quarterly performance. Instead, data on annual performance proved to be more reasonable from a data compilation perspective (e.g., most transit providers were able to provide annual data only).

## EFFECTIVE STANDARDS (OR TARGETS OR GOALS)

Another key element to consider when examining the Service Standards and Performance Metrics is if the framework uses the right standards (or targets or goals). As discussed, the targets set the “bar” or goal for performance. The evaluation process suggests that there are opportunities to update and/or change the existing standards.

For example, the Wake Transit Plan set standards and targets for route productivity. The Plan also allowed for some phasing of the targets, reflecting the idea that new routes may require time to attract riders and “mature” before they could reasonably be expected to meet the targets. The analysis shows that, in general, mature routes perform better than new routes. The data also shows that in many cases, routes did take time to reach targets. This suggests that allowing for a phasing of the targets does give routes an opportunity to grow ridership over time.

# Updating Service Standards and Performance Metrics

However, in some cases, even for new routes the standards proved easy to meet. For example, the operating cost per boarding is set too low for nearly all route categories. Data suggests that – with some exceptions – most routes in most service categories were able to meet the standard. Another clue that the standard is set too low is that routes not meeting the boardings per hour (or per trip) were still able to meet the cost per boarding metric.

A counter example is provided by the on-time performance. On-time performance measures how closely a transit service adheres to its published schedule, indicating the percentage of time a route is arriving on-time, early, and late. It is an important, customer-facing measure because it directly impacts service reliability. Routes that are properly scheduled should have strong on-time performance. Many Wake Transit Plan bus routes did not meet the targeted on-time performance, with the exception of core regional routes. Failure to meet the standard can reflect significant changes in traffic congestion and variability in travel times or a lack of regular update of schedules to make sure they reflect actual travel times.

## APPROPRIATE CATEGORIES

There may be opportunities to reconsider differences in route categories. While several categories, like Frequent and Local Routes, appear to be effective. In other cases, differences between definitions and expectations may be too nuanced and not accurate capture the purpose behind individual services or the classification makes setting performance targets challenging. For example, Core Regional and Express routes are similar because they provide longer distance trips and are targeted around specific markets. However, they have substantially different performance targets, such that Core Regional are expected to be nearly twice as productive as Express routes. While there may be opportunities to improve the targets, it may also make sense to review the categories to determine if they are properly defined.

The Wake Transit Plan Service Standards and Performance Measures has a category for demand response service, which was not used by the Wake Transit Plan, but does not have a category for on-demand services. Updates to the Service Standards should consider on-demand (or microtransit services).

## INDUSTRY TRENDS

As part of updating the Service Standards and Performance Measures, the Wake Transit Plan may also consider including additional metrics or standards. In part due to the experience with the COVID pandemic, the transit industry is placing a renewed emphasis on capturing the value or impact of service, especially for lowest income residents, people of color, persons with disabilities, and other historically disadvantaged populations.

The effort to transit plan through an equity lens has become more standard practice in recent years, with many transit agencies further prioritizing their most transit-dependent customers. An equity metric may focus on the percentage of certain populations along a route and how well they are being served by said route or the larger network itself, such as:

- Low-income households
- Historically disadvantaged populations
- Zero vehicle households
- Older adults, or people aged 65 or more
- Persons with disabilities

# Appendix A: Data Sources

# Appendix A: Data Sources

## GOTRIANGLE

- **DAILY METRICS (WEEKDAY, SATURDAY, SUNDAY)**
  - o Average Daily Boardings 2016 – 2021 (April)
  - o Daily Revenue Trips 2016 – 2021 (April)
  - o Daily Revenue Hours 2016 – 2021 (April)
- **KEY PERFORMANCE INDICATORS (WEEKDAY, SATURDAY, SUNDAY)**
  - o Boardings/Revenue Trip 2016 – 2021 (April)
  - o Boardings/Revenue Hour 2016 – 2021 (April)
  - o On-time Performance 2016 – 2020 (October)
    - Percent on-time
  - o On-time Performance 2021 (April)
    - Percent on-time
    - Percent early
    - Percent late
- **ANNUAL METRICS (ALL)**
- Annual Boardings FY2017 – FY2021
- **ANNUAL KEY PERFORMANCE INDICATORS (ALL)**
- Operating Cost/Boarding FY2017 – FY2020
- Farebox Recovery Ratio FY2017 – FY2020

## GORALEIGH

- **KEY PERFORMANCE INDICATORS (WEEKDAY, SATURDAY, SUNDAY)**
  - o Boardings/Revenue Hour 2016 – 2021 (April)
- **KEY PERFORMANCE INDICATORS (ALL)**
  - o Operating Cost/Boarding 2016 – 2019 (April)
  - o Farebox Recovery Ratio 2016 – 2019 (April)
  - o On-time Performance 2017 – 2020 (October)
    - Percent on-time
    - Percent early
    - Percent late
- **ANNUAL METRICS (ALL)**
- Annual Boardings FY2017 – FY2021
- **ANNUAL KEY PERFORMANCE INDICATORS (ALL)**
- Operating Cost/Boarding FY2017 – FY2020
- Farebox Recovery Ratio FY2017 – FY2020

# Appendix A: Data Sources

## GOCARY

- **DAILY METRICS (WEEKDAY, SATURDAY, SUNDAY)**
  - Avg Daily Boardings 2016 – 2021 (April)
  - Daily Revenue Trips 2018 – 2021 (April)
  - Daily Revenue Hours 2018 – 2021 (April)
- **KEY PERFORMANCE INDICATORS (WEEKDAY, SATURDAY, SUNDAY)**
  - Boardings/Revenue Trip 2018 – 2021 (April)
  - Boardings/Revenue Hour 2018 – 2021 (April)
- **ANNUAL METRICS (ALL)**
  - Annual Boardings FY2016 – FY2021
- **ANNUAL KEY PERFORMANCE INDICATORS (ALL)**
  - Operating Cost/Boarding FY2018 – FY2020
  - On-time Performance 2017 – 2020
    - Percent on-time
    - Percent early
    - Percent late