October 2018

Service Standards

IndyGo

Contents

WHAT ARE SERVICE STANDARDS?

Transit agencies set goals for transit services provided, which are called Service Standards. These standards enable a transit agency and its partners to monitor transit performance. IndyGo's service standards are organized within three overarching categories: Defining Features, Service Targets, and Outputs.

DEFINING FEATURES
Service features necessary for a route to be designated as either Rapid, Frequent, Basic, or Coverage.

FREQUENCY
How often a bus arrives at a stop

DAILY & WEEKLY SPAN
The hours of the day and days of the week that service operates

STOP SPACING
The average distance between bus stops

SERVICE TARGETS
Desired outcomes for service categories. These four targets often have a significant impact on whether or not someone chooses to rides transit.

TRAVEL SPEED
The average travel speed of buses along a route or route segment

RELIABILITY
The percentage of on-time bus arrivals

STOP AMENITIES
The type of amenities available at a bus stop, including shelters, seating, trash cans, etc.

PASSENGER LOAD
The maximum load of passengers on a bus, in proportion to the number of seats

OUTPUTS
Metrics that IndyGo uses to understand how a route is performing.

PRODUCTIVITY
The number of boardings per hour of revenue service; a measure of cost-efficiency

COVERAGE
Service that is provided without the expectation of a high level of ridership

SERVICE CATEGORY: RAPID

IndyGo's bus service consists of four service categories: Rapid, Frequent, Basic, and Coverage. Service standards for **Rapid** service (including the Red Line, Purple Line, and Blue Line) and a map of **Rapid** service are shown below:

DEFINING FEATURES

RAPID

10 MINUTES

20 HOURS DAILY*

BUS STOPS EVERY HALF-MILE

SERVICE TARGETS

25 MPH AVERAGE BUS SPEED

MAXIMUM BUS STOP AMENITIES

90% ON-TIME ARRIVAL

150% MAXIMUM PASSENGER LOAD

OUTPUT

27+ BOARDINGS PER SERVICE HOUR

NOT COVERAGE SERVICE

* 16 hours of service on Sundays

RED LINE
BLUE LINE
PURPLE LINE

FREQUENCY

DAILY & WEEKLY SERVICE SPAN

BUS STOP SPACING

BUS TRAVEL SPEED

RELIABILITY

BUS STOP AMENITIES

PASSENGER LOAD

PRODUCTIVITY
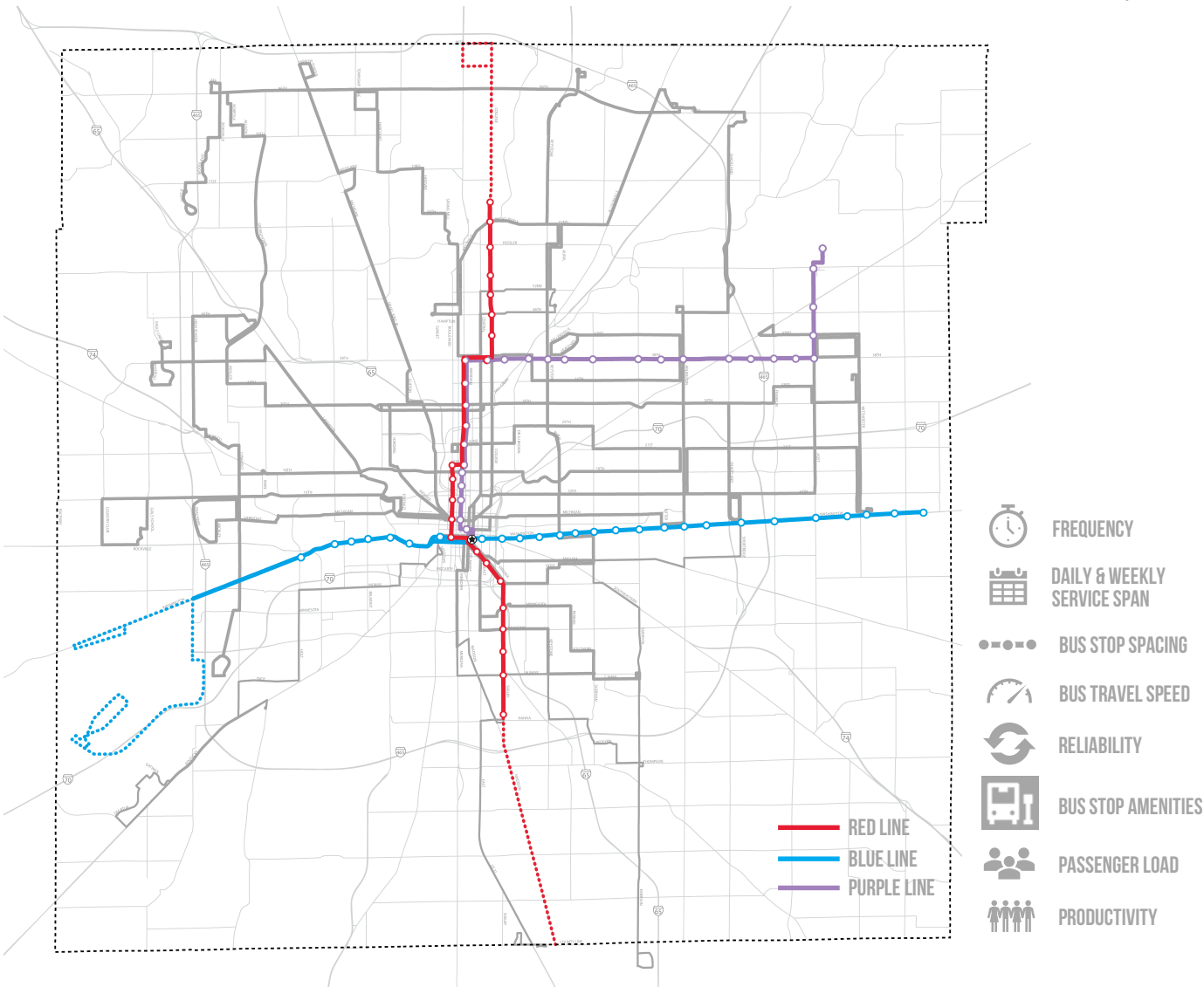
SERVICE CATEGORY: FREQUENT

Service standards for **Frequent** service and a map of **Frequent** route segments are shown below:

FREQUENT

DEFINING FEATURES

15 MINUTES

20 HOURS DAILY*

BUS STOPS EVERY QUARTER-MILE

SERVICE TARGETS

17 MPH AVERAGE BUS SPEED

MODERATE BUS STOP AMENITIES

85% ON-TIME ARRIVAL

120% MAXIMUM PASSENGER LOAD

OUTPUT

27 BOARDINGS PER SERVICE HOUR

NOT COVERAGE SERVICE

* 16 hours of service on Sundays

FREQUENT SERVICE

FREQUENCY

DAILY & WEEKLY SERVICE SPAN

BUS STOP SPACING

BUS TRAVEL SPEED

RELIABILITY

BUS STOP AMENITIES

PASSENGER LOAD

PRODUCTIVITY

SERVICE CATEGORY: BASIC

Service standards for **Basic** service and a map of **Basic** route segments are shown below:

DEFINING FEATURES

30 MINUTES

18 HOURS DAILY*

BASIC

BUS STOP DISTANCE
VARIES BASED ON CONTEXT

SERVICE TARGETS

14 MPH AVERAGE BUS SPEED

MODERATE BUS STOP AMENITIES

85% ON-TIME ARRIVAL

120% MAXIMUM PASSENGER LOAD

OUTPUT

21 BOARDINGS PER SERVICE HOUR

NOT COVERAGE SERVICE

* 16 hours of service on Sundays

BASIC SERVICE

FREQUENCY

DAILY & WEEKLY SERVICE SPAN

BUS STOP SPACING

BUS TRAVEL SPEED

RELIABILITY

BUS STOP AMENITIES

PASSENGER LOAD

PRODUCTIVITY

SERVICE CATEGORY: COVERAGE

Service standards for **Coverage** service and a map of **Coverage** route segments are shown below:

COVERAGE

DEFINING FEATURES

60 MINUTES

16 HOURS DAILY

BUS STOP DISTANCE
VARIES BASED ON CONTEXT

SERVICE TARGETS

14 MPH AVERAGE BUS SPEED

LIMITED BUS STOP AMENITIES

85% ON-TIME ARRIVAL
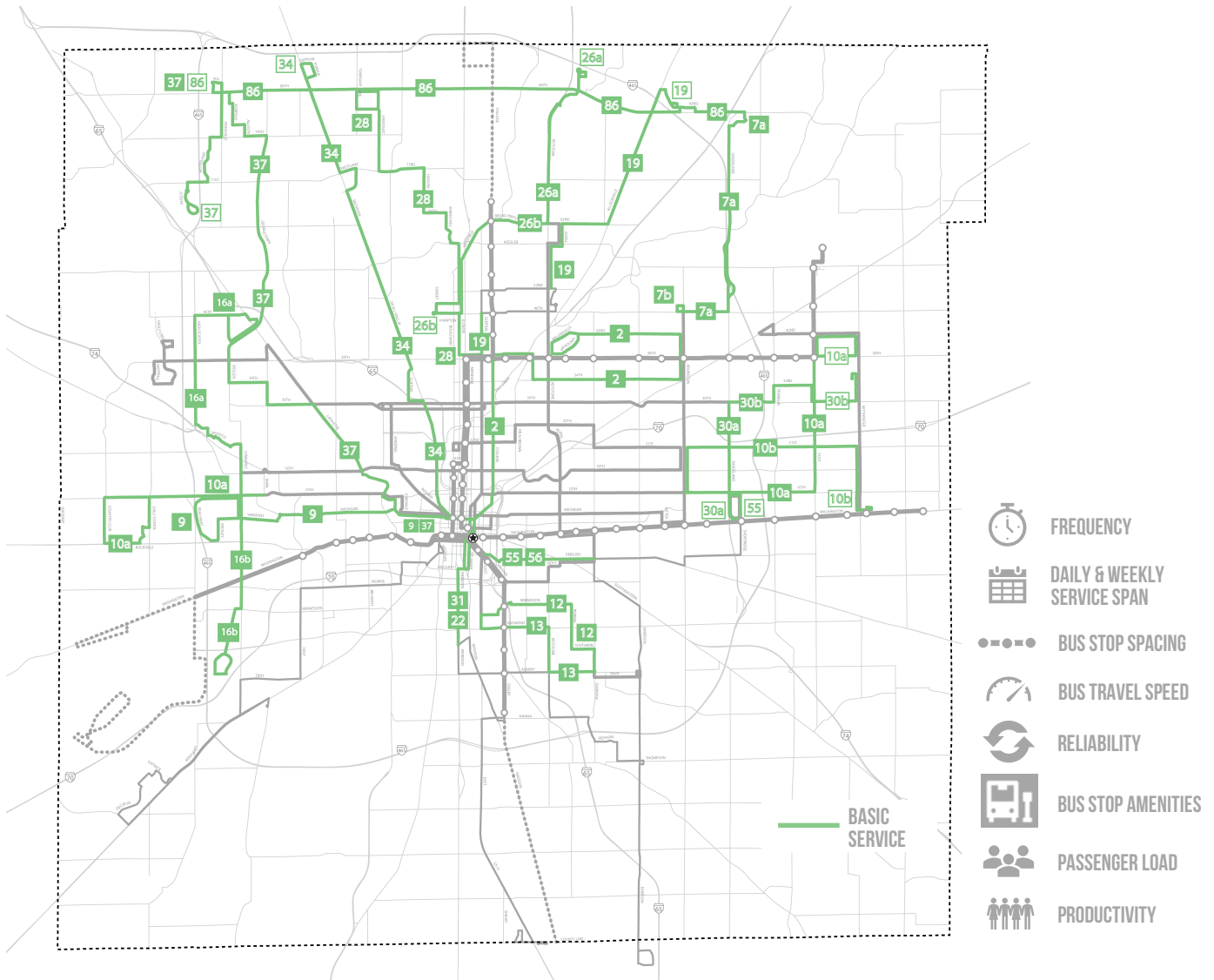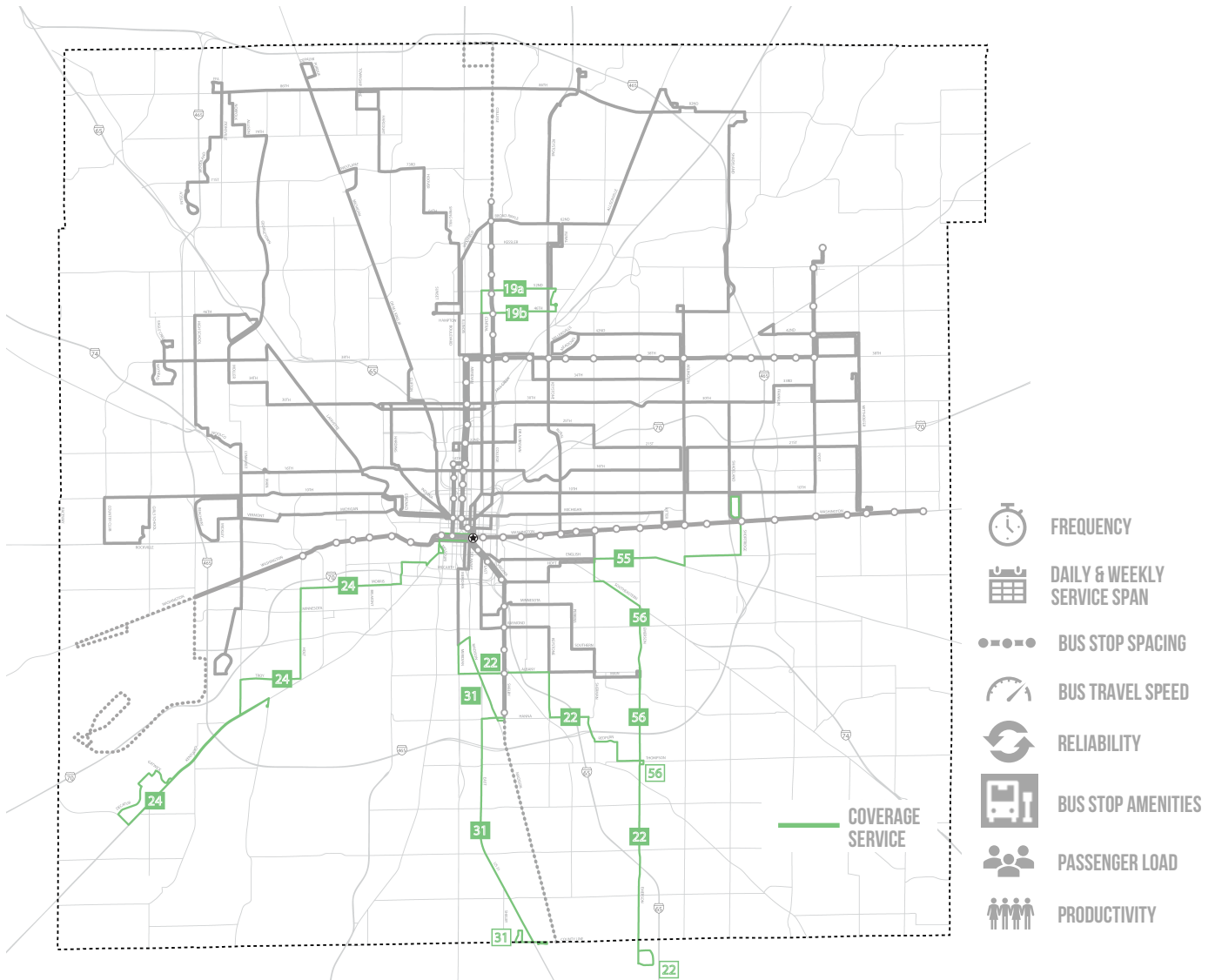
120% MAXIMUM PASSENGER LOAD

OUTPUT

NO STANDARD FOR PRODUCTIVITY

COVERAGE SERVICE

COVERAGE SERVICE

FREQUENCY

DAILY & WEEKLY SERVICE SPAN

BUS STOP SPACING

BUS TRAVEL SPEED

RELIABILITY

BUS STOP AMENITIES

PASSENGER LOAD

PRODUCTIVITY

FREQUENTLY ASKED QUESTIONS

Why can't a bus stop be located closer to my home or workplace?
Bus stops are located strategically along routes. More bus stops located along a route mean the bus has to stop more frequently. This slows the overall bus travel speed and makes bus trips longer for all passengers. IndyGo must balance bus stop access and passenger convenience with the desire to keep the bus in motion. *See page 11 for more information.*

Why can't my bus route be changed to be closer to my home or workplace?
For transit to be useful and efficient for the greatest number of people, bus routes need to be linear, with a straight direction of travel and limited turning movements. IndyGo is not able to make major bus route adjustments based on individual rider requests. Door-to-door local bus service is neither financially efficient nor operationally possible for IndyGo to provide. *See page 8 for more information.*

Why is my bus running late?
Traffic delays along a bus route, the number of times a bus needs to stop to pick up passengers, and the length of time a bus spends at each stop are the most common reasons why a bus may be running late. IndyGo has several options available to improve reliability, including traffic signal timing adjustments, dedicated bus lanes in congested areas, addressing bus stop spacing, adding more off-board fare collection options, and more. *See pages 14-15 for more information.*

Why is my bus full or over capacity?
High demand for bus service along a route can be a reason for a full bus. IndyGo monitors how full a bus is in order to make informed decisions on whether or not larger capacity buses are needed, or if additional buses need to be added along a route. *See page 17 for more information.*

Why does my bus stop not have a shelter or bench?
Shelters and benches require significant capital and operating expense. This means that IndyGo must be selective about where shelters or benches are placed. Stops with higher ridership are more likely to have amenities. Additionally, in many locations there is not enough space for shelters or benches within the public right-of-way (the street space owned by the City). IndyGo is constantly evaluating its existing bus stops in order to identify opportunities to add seating and shelters. *See page 16 for more information.*

Why don't buses run 24 hours per day, 7 days per week?
IndyGo is limited to its available resources, so 24/7 service is not an option at this time. However, IndyGo is increasing the hours of service for many routes on weekdays and weekends. Bus service will also run 7 days per week on all bus routes. If additional funding becomes available, or if ridership increases, individual routes will be evaluated for possible service improvements. *See page 26 for more information.*

FREQUENTLY ASKED QUESTIONS

Why does my bus only arrive every hour?
IndyGo weighs a number of factors when determining how frequently a bus travels on a route. These factors include existing ridership, proximity to jobs, available resources, adjacent land use and development characteristics, and other factors. *See page 9 for more information*.

Why is the bus so slow?
With the exception of IndyGo's Rapid transit services, buses are often affected by the same traffic congestion as all other vehicles, plus the added time needed to let riders on and off. IndyGo and the City of Indianapolis can collaborate to increase bus speeds by prioritizing buses using dedicated transit lanes or traffic signal controls. *See page 13 for more information.*

Why is the bus empty?
IndyGo buses may have fewer passengers on them when they are just starting or completing a trip, or when they are heading to and from the garage.

Why are there only three rapid transit lines?
As part of the Marion County Transit Plan, resources were identified for three rapid transit lines. Frequent transit routes also provide high-quality transit service and serve many areas of Marion County. Frequent routes will be individually evaluated to better understand if an upgrade to Rapid transit service is warranted. *See page 8 for more information.*

How does IndyGo evaluate its own performance?
IndyGo has access to many data points to understand and evaluate how each bus route is performing. However, the primary way is to calculate the number of riders per revenue service hour, also known as Productivity. If a route is performing well, then Productivity will meet the established standard for its service category. If not, IndyGo staff will review to better understand why it is not meeting the standard. *See page 20 for more information.*

Why can't I ride the bus to Plainfield or other cities and towns outside of Marion County?
IndyGo only operates bus service in Marion County, with some limited exceptions. For IndyGo to run in other areas, those areas will need to either contract with IndyGo for service or identify a funding source to cover the capital and operating expenses required for new connecting transit service.

MARION COUNTY TRANSIT PLAN
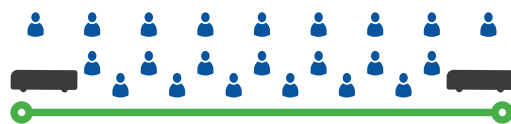# NETWORK DESIGN PRINCIPLES

THE ROUTES IDENTIFIED IN THE MCTP
WILL BEST SERVE CURRENT AND FUTURE RIDERS
BY OPERATING IN AREAS OF:

DENSITY

Areas with more people going to and coming from destinations located near stops.
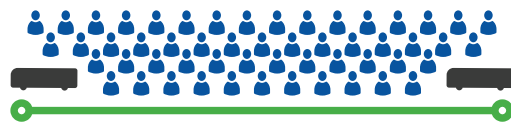
HIGH RIDERSHIP

LOW RIDERSHIP
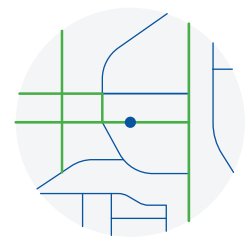
WALKABILITY

Areas with more sidewalks, safer street crossings, and a connected street grid.

HIGH RIDERSHIP

LOW RIDERSHIP

CONTINUITY

Routes that avoid traveling through long gaps of low-density development.

HIGH RIDERSHIP

LOW RIDERSHIP

LINEARITY

Routes that run frequently and in straight lines with few deviations.

HIGH RIDERSHIP

LOW RIDERSHIP

Definitions

Comprehensive Operational Analysis – Commonly referred to as the COA, this analysis examines existing conditions and routes future service plans. Typically updated every five years.

Coverage service – Transit service that has a purpose of providing geographic coverage of an area in order to provide transit access to as many people and jobs as possible.

Farebox recovery – Fare revenue from a service relative to the cost to operate a service; calculated by dividing fare revenue by the operating cost.

Frequency – the number of buses that operate per hour along a route for a majority of the day, which is expressed by the number of minutes between bus arrivals.

Key Transfer Locations – Scheduled connections between routes to allow individuals to transfer from one route to another. These are key components of a grid-based system as the transfers allow the system to maintain frequency and riders to move easily from one part of town to another.

Marion County Transit Plan (MCTP) – The transit plan for Indianapolis through 2021, which includes a 70% increase in local route service and the construction of 3 rapid transit routes.

Paratransit – Paratransit is federally-required door-to-door service for qualified individuals; in Indianapolis in accordance with the Americans with Disabilities Act (ADA) and IndyGo policy; the service is called Open Door and is operated by a contractor managed by IndyGo.

Passenger Load – The number of passengers on a bus relative to the number of seats on a bus; presented as a percentage.

Peak – The time of greatest demand for transportation, there are usually two peak periods: morning and evening. Morning peak is from 6 a.m. to 9 a.m. and evening period is from 3 p.m. to 6 p.m.

Productivity – Productivity measures the ridership on a service relative to the cost of providing that service.

Reliability – A measurement of on-time performance, or how often a bus adheres to its scheduled time; calculated as a percentage of time points on a route when a vehicle arrived on time.

Revenue hour – One transit vehicle and its driver operating in revenue service for one hour.

Ridership service – Transit service with the purpose of attracting high ridership numbers.

Route – A specific and fixed path of travel of a transit vehicle.

Route segment – A portion of a transit route.

Service Area – The area served by public transit, typically a measure of a distance from a fixed route. In Indianapolis, the Service Area is the entirety of Indianapolis, with some service provided by contract to excluded cities.

Service category – A sub-type of transit service, based on the frequency of service; for IndyGo service categories include Rapid, Frequent, Basic, and Coverage.

Service span – The hours of the day and the days of the week that a transit service operates.

Service Standards – Measurable benchmarks for key areas of transit service performance.

Stop Amenity – An object located at a bus stop that improves the rider experience, including seating, shelters, boarding pads, lighting, waste receptacles, bike racks, real-time arrival information, wi-fi, and more.

Stop Spacing – The distance between bus stops.

Time Point – A specified location along a route assigned a time of arrival for vehicles.

Travel Speed – The average speed of a bus from the beginning of a route (or route segment) to the end of the route (or route segment).

Purpose

Service standards are intended to provide measurables for a transit system that can then be monitored. The standards provide clear indicators when performance falls below the benchmark. The indicators will trigger a service evaluation and action plan to resolve identified performance issues. In addition to transit service performance reviews, the service standards will also be used to support service evaluate as part of IndyGo's Title VI reporting process.

The Service Standards presented in this document are a direct result of significant public involvement as part of the 2015 *Comprehensive Operational Analysis* (COA) and the **Marion County Transit Plan.**

The benchmarks expressed in the Service Standards are related to two kinds of goals:

- Ridership goals, which are met through transit being used by more people.
- Coverage goals, which are met through transit being available regardless of how much it is used.

Marion County Transit Plan: Outlines significant service improvements to local routes and the construction of 3 rapid transit routes.

IndyGo seeks to spend 80 percent of its budget pursuing the highest possible ridership per unit of cost and 20 percent of its budget providing coverage service.

Principles Governing these Standards

There are several principles that are being used to govern the standards identified in this document. First, the performance of services is best measured against their intended purposes. Since not all transit services are designed to achieve the same goals, the service standards will differ for each service category based on the intended service goals

Second, while service standards are conventionally applied to entire transit routes, there are instances where the application of some standards will be different along certain segments of a route. A route may comprise multiple segments that differ in purpose. Therefore, each route segment should be assigned a service category and should be evaluated based on the service standard assigned to that service category.

Third, while communication of these standards is important for transparency, staff discretion is an important part of any policy document. Therefore, in an evaluation, staff may recommend no changes because of factors outside the control of IndyGo.

Network Design Principles

The real benefits of transit present themselves at the systemwide level. This is especially true of high-frequency services, where the interdependence between routes is key to the system design.

Service Area

IndyGo's service area is defined as Indianapolis which is approximately 370 square miles; by special arrangement, IndyGo provides service to jurisdictions that do not contribute to its local funding.

Directness

IndyGo bus routes are designed for travel along paths that can be perceived as reasonably linear, providing efficient service to passengers while controlling operating costs. More information about how IndyGo weighs route deviations against route directness is provided below.

Simplicity

IndyGo will design and maintain a network of routes that are simple to learn, navigate, and remember for new passengers. Simplicity must be emphasized and safeguarded by IndyGo, as many service requests fielded can introduce increased and unnecessary network complexity. More considerations of simplicity vs. complexity are discussed below.

Service Categories

Service Category	Map Representation	Predominant Frequency*	Purpose
Rapid	Color reflecting name of route (e.g. red for Red Line)	15 minutes or better	Ridership
Frequent	Thick dark green line	15 minutes or better	Ridership
Basic	Medium light green line	30 minutes	Mix of ridership and coverage
Coverage	Thin light green line	60-120 minutes	Coverage

*Table 1: Service Categories and their associated map colors, predominant frequencies and purposes. * The "predominant frequency" is the frequency that is sustained throughout the weekday morning, midday, and evening, and in the daytime on weekends.*

Rapid

Rapid services (10 to 15-minute frequency) must be ridership-justified. The concentration of resources on these corridors is essential for achieving the higher ridership and productivity expected of these corridors.

While Rapid service almost always runs frequently, it differs from Frequent service due to its speed. The higher speeds of rapid transit are achieved through wider stop spacing, dedicated lanes, transit

signal priority (TSP), level boarding, and off-board fare collection. Rapid service is generally perceived by transit riders as being more useful than other service categories because it has a faster average vehicle speed.

Frequent

Frequent services (≤15-minute frequency) must also be ridership-justified. Generally, Frequent service has high ridership, but not high enough to warrant the resources committed to Rapid transit. Top performers in this category will be reviewed for potential upgrade to Rapid service as soon as a full analysis can be completed and as resources become available.

Basic

Basic Services can be categorized as either ridership or coverage. Basic services that are considered ridership-justified are high performance routes (or route segments) which may be upgraded to frequent service if/when resources permit. Basic services that are coverage-justified generally have high enough ridership to justify frequency greater than one trip every hour. Because conditions for very high ridership are not present, these routes are unlikely to be upgraded into the Frequent service category. Generally, coverage-justified Basic services are more productive at their greater frequencies than they would be if the service were cut to hourly.

Coverage

Coverage services are intended to provide transit in places that are harder to serve due to lower population density. In some places equity considerations drive the need for some level of service. Coverage services achieve low levels of ridership relative to service cost, but that is accepted as ridership is not the purpose of providing Coverage service.

Paratransit

The services described above are complemented with paratransit service, called Open Door, throughout the service area. These services are required by the Americans with Disabilities Act (ADA) and are operated in accordance with federal statutes and regulations. IndyGo is required to provide door-to-door services for individuals who qualify within ¾ miles of fixed route service. IndyGo serves all of Marion County, which exceeds the federal ADA mandate. The service is required to operate the same hours as fixed route service. Standards for Paratransit are not included in this document but are included in other IndyGo planning documents.

Elements for Service Categories

Defining Features

These describe features that must be present for the service to be in the given category. If a service does not have these features, it should not be in this category. These features include:

- Frequency
- Daily and Weekly Span
- Stop Spacing

The following section describes each Defining Feature, with the characterization required for a route to be considered in a service category.

Frequency

Frequency is the number of buses that operate per hour along a route for a majority of the day, which is expressed by the number of minutes between bus arrivals. Service during the periods in the early morning and late evening are often less frequent than peak hour service due to reduced demand.

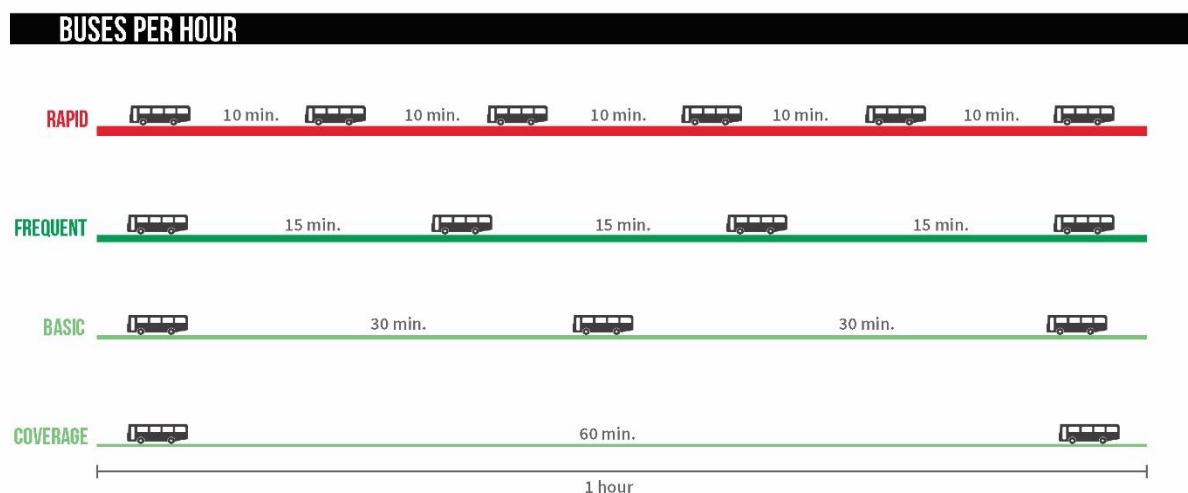| Service Category	Frequency
Rapid	10 min.
Frequent	15 min. or better
Basic	30 min. or better
Coverage	60 min. or better

Table 2. Frequency by Service Category

Figure 1: Graphic representing the frequency presented by the different Service Categories.

Daily and Weekly Span

Span refers to the hours of day and the days in the week that a service operates, and the hours that it runs at its defining frequency. Routes meant to drive ridership should have longer spans of service because the service is more useful, providing trips for work and entertainment.

Service Category	Weekdays			Saturdays		Sundays & Holidays	
	Total Hours	Service Hours at defining frequency	Service Hours at lower frequency	Service Hours at defining frequency	Service Hours at lower frequency	Service Hours at defining frequency	Service Hours at lower frequency
Rapid	20	14	6	14	6	0	16
Frequent	20	14	6	14	6	0	16
Basic	18	16	2	16	2	0	16
Coverage	16	16	0	16	0	0	16

Table 3. Service span by service category.

Stop Spacing

Stop Spacing is the distance between bus stops. Stop spacing is a key contributor to the operational efficiency and productivity of a transit route.
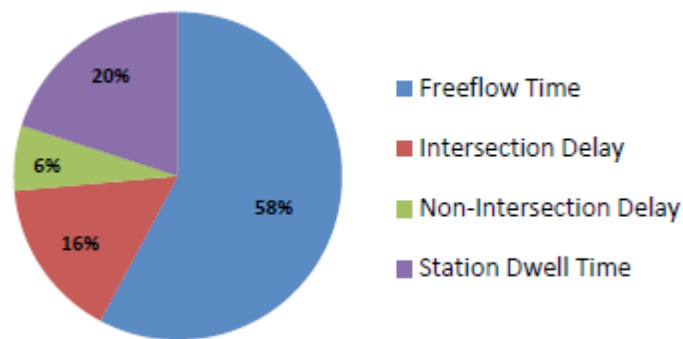

Figure 2. How buses on Route 8, on Washington Street, spends their time.

Serving a stop takes time, regardless of the number of people boarding or alighting. The more stops a bus makes, the slower its average operating speed is, the less useful it is to passengers, and the costlier it is to operate. To achieve higher travel speeds and ridership, IndyGo encourages its customers to gather at fewer stops. Although fewer stops can be inconvenient, the increased frequency and speed of routes is intended to mitigate it.

Stop spacing standards are mostly motivated by the need to reduce delay, as delay can discourage ridership and make service more expensive to operate. However, wider stop spacing has other advantages:

- **Safer pedestrian environment.** Wider stop spacing increases the likelihood that every stop can be located at a place where it is safe to cross the street. IndyGo resists placing stops on two-way routes where it is not possible to cross the street safely. Any round trip will require using stops on both sides of the street, but stops are not useful if crossing the street is difficult, dangerous, or impossible for most customers.
- **Better stop amenities.** Wider stop spacing increases the percentage of customers who will have access to higher quality bus stop amenities at their typical bus stop locations. These amenities may include benches, shelters, real-time bus arrival information, off-board fare collection, and other amenities. The fewer stops there are, the greater the proportion of stops that will have these amenities.

Stop spacing for Rapid and Frequent routes must be managed carefully to ensure that stops are not too close, resulting in the bus stopping too frequently. The Marion County Transit Plan recommended Rapid service stopping, on average, twice per mile (approximate distance of a half-mile between stops) . The expectation is that Rapid service will be fast and frequent enough that riders will be willing to walk further to access it. An emerging industry standard for Frequent service is to space stops approximately four times per mile (approximate distance of a quarter-mile between stops). Basic and Coverage route stop spacing varies based on the physical context of an area and whether the pedestrian infrastructure provides a safe walking environment. Often times, additional stops need to be provided due to unsafe or non-existent pedestrian infrastructure or a disconnected street network.

Factors staff consider when evaluating stop spacing include:

- Land use and zoning
- Presence and condition of pedestrian infrastructure
- Geographic and right of way considerations
- Connecting routes
- Ridership of the stop

Service Category	Stops per mile	Ideal distance between stops
Rapid	2 stops	½ mile
Frequent	4 stops	¼ mile
Basic	4 to 6 stops	Varies based on context

Coverage	4 to 6 stops	Varies based on context

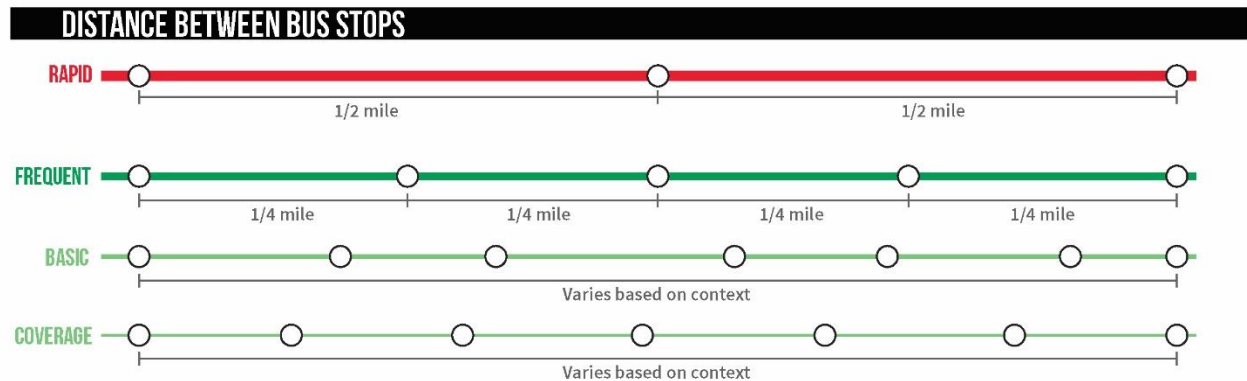Table 4 Stop spacing by service category

Figure 3. Stop spacing by service category.

The service standards in the table refer to averages, with an understanding that actual stop spacing will reflect local challenges and needs. The average for each category should be within the stops spacing range from that category.

Flexibility is key for the low-ridership coverage services. Coverage routes may change over time and experiences may vary across different urban forms, too frequent stop spacing may result in issues associated with travel speed and reliability. Such situations require flexibility in determining stop spacing.

Service Quality Targets

These describe outcomes that result from other features, but they are inputs into peoples' decisions to use transit. These include:

- Travel Speed
- Reliability
- Stop Amenities
- Passenger Load

The following section describes each Service Quality Target and the target anticipated for each route in any given service category.

Travel speed

The travel speed of a bus route has a direct impact on its usefulness and its operating cost: slower service requires more buses to deliver a given frequency. Maximizing ridership requires services that maintain high average operating speeds relative to alternative options.

Service Category	Scheduled Speed
Rapid	20 to 22 mph
Frequent	13 to 17 mph
Basic	13 to 17 mph
Coverage	14 to 18 mph

Table 5. Scheduled speed by Service Category

Travel speed standards determine scheduled speed, which is in turn used to build route schedules. When actual speeds do not adhere to scheduled speeds, schedule adherence, as measured through on-time performance, will suffer.

Routes often have varying service categories along different segments of the route. Because of this, scheduled speed should be evaluated for each unique route segment.

Operating speeds are affected by:

- **Ridership-related delays.** These types of delays result from increased ridership and therefore slower boarding and alighting times. A transit agency has tools to improve travel speeds despite high ridership, including reducing the number of stops per mile. Other tools available to improve travel speed include all-door boarding, off-board fare collection, or upgrading to digital fare payment systems (which process payments more quickly than cash payment methods).
- **Traffic congestion and signals.** Transit agencies often collaborate with City engineering departments on transit signal priority systems that reduce the amount of time buses spend at red lights and/or provide infrastructure (such as dedicated transit-only lanes) that allows transit vehicles to "queue jump" cars waiting at congested intersections. Transit-only lanes can also be incorporated along longer sections of congested roadways.

On-Time Performance

On-time performance measures how often the bus adheres to its scheduled time. The better the on-time performance, the more reliable a system can feel for riders. This reliability provides confidence and comfort to transit riders that the bus will arrive on time and take them to their destination as intended.

IndyGo's current standard for on-time performance is as follows: if a bus is less than one minute early or less than five minutes late at a time point, it is considered on-time. The table below outlines the 2017 Reliability standard and the 2021 Reliability standard, which are both expressed as the percentage of buses that arrive on-time.

Service Category	2018 Reliability Standard	2021 Reliability Standard
Rapid	90%	90%
Frequent	75%	85%
Basic	75%	85%
Coverage	75%	85%

Table 6. Reliability by Service Category. Reliability is measured as percentage of buses that arrive on-time.

There are two reliability standards to reflect the resource reality of today versus the planned investments for the 2021 system. The resource-constrained reality of today requires a lower-reliability standard. IndyGo, however, will work to improve the on-time performance as more buses and drivers are added.

Under normal conditions Rapid and Frequent services are likely to experience the greatest delays (because of their high ridership and more congested operating environments), and it can be tempting to set lower standards for them. However, Rapid and Frequent services also carry the most people and are meant to maximize the number of riders they attract, so their delay has a greater influence on the overall percentage of IndyGo's riders who experience delays.

Because routes often have varying service categories along different segments of the route, reliability should be evaluated for each unique route segment as opposed to being evaluated as full routes.

It is impossible to achieve and maintain 100 percent on-time performance due to varying traffic and weather conditions, construction activity, detours, collisions, and other service interruptions. Nevertheless, every effort should be made to ensure that all IndyGo buses operate safely and arrive "on-time".

Key Transfer Locations

One of the benefits of a grid-based transit network is the increased ability to get to and from many destinations more directly without always having to transfer at one central transit hub. Because of the increased likelihood of transfers within a grid-based network, higher reliability standards should be set for on-time performance at key transfer locations where a high number of riders will transfer between routes. IndyGo has identified two key transfer locations: Downtown Transit Center and Washington Square Mall. IndyGo will monitor the on-time performance of transfers at these locations, but at this time will not set a standard or require recommendations based on any transfer performance at these transfers.

Stop Amenities

IndyGo considers multiple factors when determining what amenities to place at bus stops. Often these factors, many of which are outside of IndyGo's control, limit what types of amenities can be

included at a bus stop. The factors IndyGo considers during stop amenity improvement decisions include:

- Existing ridership numbers
- Availability of public right-of-way (ROW)
- Adjacent and nearby property zoning and land use
- Access to popular destinations
- Proximity to stops with existing amenities
- Pedestrian infrastructure (connecting sidewalks, curb-ramps, crosswalks, etc.)
- ADA accessibility
- Proximity to key transfer locations and where routes connect

Not all amenities listed in the following table will be present at every stop type.

	Amenities	Typical Ridership
Basic Bus Stop	Bus Stop Sign Boarding Pad (if possible)	Default
Bus Stop with Bench	**Basic Bus Stop Amenities and:** Seating (Bench or Simme-Seat)	10-20 Boardings Per Day
Sheltered Bus Stop	**Basic Bus Stop Amenities and:** Shelter Lighting Waste Receptacle Seating Bike Racks	20+ Boardings Daily
Super Stop	**Sheltered Bus Stop Amenities and:** Larger Shelter Near-Level Boarding Real-Time Information Display Security Cameras Off-Board Fare Payment	Based on Route Service Category
Rapid Transit Station	**All Super Stop Amenities and:** Station Signage Level Boarding Fully Covered Platform WiFi	Determined by Planning Effort
Transit Center	**All Rapid Transit Station Amenities and:** Public Restrooms On-Site Security Staffed information desk	Determined by Planning Effort

Table 7. Stop Amenities by Boardings.

Passenger Load

In managing bus crowding, there is a balance between maximizing passengers on a bus and providing a comfortable passenger experience. The intent of passenger load standards, then, is to identify a quantifiable balance between passenger comfort (and safety) and operating efficiency. These standards define maximum passenger loads to ensure acceptable levels of rider comfort and safety while promoting efficiency.

Passenger load is defined as the percentage above seated capacity of a vehicle. Passenger load is measured by evaluating average ridership per trip against vehicle capacity. A passenger load of 120 percent (which means there are 20 percent more passengers than the number of seats on the bus) generally reflects a comfortable standing load and is recommended as a balance point between maximizing passenger comfort and productivity. However, for Rapid service, a passenger load of 150 percent is set, as it is expected that riders will be more accepting of increased passenger loads due to increased service speed, shorter trip times, and overall service efficiency.

Category	Passenger Load
Rapid	150%
Frequent	120%
Basic	120%
Coverage	120%

Table 8. Passenger load by Service Category.

If the load standard is exceeded, IndyGo should evaluate the potential for improving service frequency.

Outputs

Outputs measure achievement towards the highest-level goals of the IndyGo network, productivity (ridership per unit of cost) and coverage (provision of service to socially important places and people).

Output: Productivity

Productivity measures the ridership on a service relative to the cost of providing that service. Productivity is measured as boardings per service revenue hour. A *revenue hour* represents one transit vehicle and its driver operating in service for one hour.

Service Category	Minimum Productivity	Productivity Threshhold
Rapid	> 27*	18
Frequent	27	18
Basic	21	14
Coverage	None	N/A
System-wide	23	15

*Table 9. Productivity by Service Category. *Rapid routes should have a productivity that exceeds Frequent routes.*

Productivity tracks generally with farebox recovery (fare revenue / operating cost). Farebox revenue is based on productivity, but also on average fare per boarding. Productivity will be measured as an annual average that includes a complete cycle of seasons and school years.

Because routes often have varying service categories along different segments of the route, productivity will be evaluated for each segment of a route based on its service category; these are called major segments.

Output: Coverage

The goal of a coverage service is to provide transit access to as many people and jobs as possible, acknowledging that the purpose of the route is to provide geographic coverage. While IndyGo has set a long-term goal of 20 percent of its operating budget to go towards coverage services, that percentage will be higher in the short-term. IndyGo will work towards achieving 80 percent ridership and 20 percent coverage levels by adding additional ridership-based service in the future, not necessarily by cutting coverage service.

Category	Minimum Coverage
Rapid	None
Frequent	None
Basic	None
Coverage	Maximize residents and jobs near coverage services

Table 10. Coverage by Service Category.

One measure of the outcome of both decisions - to dedicate up to 20 percent of the transit budget to providing coverage and to run those coverage services as close to as many people and jobs as possible - is the percentage of Marion County residents and jobs that are within a half-mile of service.

Using and Updating these Standards

Monitoring the Standards

Service standards provide measurable benchmarks from which performance can be monitored and evaluated. The standards indicate when an aspect of performance is not what the agency or its partners intended. Such indication should trigger an evaluation of the problem and a plan of action for resolving it. The table below identifies the review process for a service standard and when staff will recommend modifications based on the review; these are all subject to the professional discretion of IndyGo staff.

	Standard	Review Process	Modifications Recommended
DESIGN FEATURE	Frequency	• Corridor Planning • COA	Plan recommendations*
	Daily and Weekly Span	• Corridor Planning • COA	Plan recommendations
	Stop Spacing	• Corridor Planning • COA • Productivity Review	Plan recommendations**
SERVICE TARGETS	Travel Speed	• Productivity Review • COA	Below standard
	Reliability	• Productivity Review • COA	Below standard
	Stop Amenities	• Ongoing/continuous staff review	Increase in boardings, or as part of street redesign process
	Passenger Load	• Productivity Review • COA	Exceeding maximum load for a Service Category
OUTPUTS	Productivity	• Productivity Review	< 2/3 of Service Category Productivity

	Coverage	• COA • Staff discretion **	***

*Table 11. Standard timing and change table. *Frequency changes should be done only during a rigorous and comprehensive transit planning process. The process for evaluating frequency is identified in the Appendix.*
***Stop spacing may change as a result of the annual review of network and route productivity.*
****New service requests are likely to be for Coverage routes. There are steps outlined in these Service Standards to evaluate whether additional Coverage is justified.*

Review Process

Frequency, span, and stop spacing are all outcomes of service planning activities. They can be measured and checked against the standards at the time any plan (corridor or short-range network plan) is proposed and adopted. The Service Quality Targets (Travel speed, reliability, stop amenities, passenger load) may be evaluated on a more regular basis, as part of the Productivity Review. Table 12 provides an overview of different IndyGo service review processes, including the frequency of the process. The Productivity Review is described in additional detail further in this section.

Review Process	Process Frequency	General Process Purpose
Comprehensive Operational Analysis (COA)	Four to five years.	A comprehensive review of existing operations and suggestions for service changes.
Corridor Planning	As Needed	Typically prompted by a COA, corridor planning evaluates transit demand for a particular corridor, analyzing demand and providing a recommendation for service.
Productivity Review	Annually	Review of Service Standards for the existing network and modification recommendations for any substandard routes.
Staff Discretion	By discretion	Staff continually reviews service data and customer and employee feedback. Staff may decide to make minor changes to a route based on their information-gathering.

Table 12 Service review processes

Productivity Review

IndyGo should evaluate its network and route performance according to these Service Standards on at least an annual basis. This process is defined as the "Productivity Review". This review encompasses evaluation at the route (and segment) level of productivity of the network. Any new service or network element should be allowed to run an entire year before judgements are made about its productivity.

The process is outlined as follows:

1. Review services relative to associated service standards
2. Identify underperforming services,
3. Evaluate deficiencies causing performance issues,
4. Recommend modifications,
5. Obtain approval from appropriate decision-makers,
6. Implement the modifications, and
7. Monitor route performance.

Review services relative to associated service standards

The productivity of each major segment in each route will be determined. Staff decide what major segments are and their defining characteristic is their Service Category. As Figure 4 conveys, a route may have several major segments.
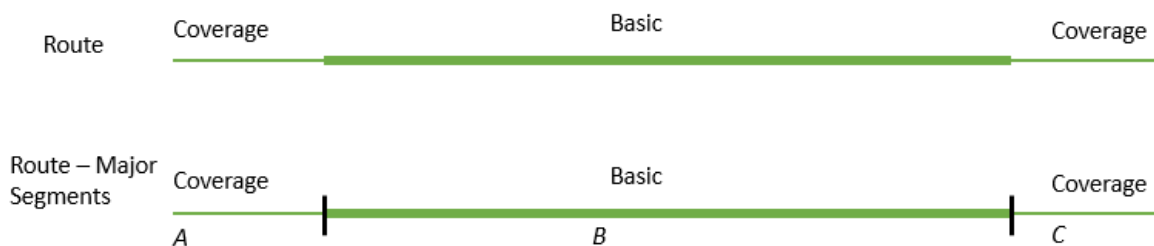

Figure 4. Example of Major Segment determination process.

Identify underperforming services

Productivity outcomes are the result of an entire network layer of a given frequency. Thus, the standard presented in Table 9 is for the *average across the entire category*. A deficiency occurs when a single major segment for a route drops below 2/3 of the standard outlined in Table 9. This recognizes the interdependence found in a public transit network. The entire route is then analyzed, with particular focus paid to the major segment considered deficient.

Evaluate deficiencies causing performance issues

Once a deficiency is identified, the Service Quality Targets and underlying metrics should be evaluated. On-time performance data is available to IndyGo daily, though the most advanced transit information systems allow for it to be monitored in real time. Automatic Vehicle Location data should be queried to diagnose potential problems. Through a detailed analysis it may be possible to determine whether a delay problem correlates with a particular route segment or a particular time of day, or other factors.

Other Targets, including speed, stop amenities, and passenger load should be investigated equally.

Recommend modifications

The application of productivity standards to existing routes is a flexible process. The purpose of the standards is to help identify routes that are most in need of service modifications, such as restructuring to eliminate lower-productivity segments or branches, adjusting service frequency to better reflect the demand for service, or providing additional promotion of low ridership routes. Elimination of routes is only intended as a last resort, when it has been determined that no cost-effective actions are able to improve the productivity of the route.

Potential solutions to resolve performance issues include, but are not limited to:

- Alter bus stop spacing or bus stop locations (far side or nearside of intersection)
- Install signal priority
- Implement off-board fare collection and all door boarding
- Add dedicated transit lanes or intersection queue jumps
- Create public campaigns about helpful passenger practices for fast operation
- Adjust bus schedule
- Add additional buses to improve frequency
- Improve bus stop amenities
- Simplify bus routing

Table 13. Identified deficiencies and possible actions to resolve issues.

Obtain Approval from Appropriate Decision Makers

Present recommendations to internal IndyGo staff and adjust as needed. The changes should then be presented to any appropriate stakeholders (such as the City of Indianapolis' Department of Public Works) and IndyGo subcommittee(s), and then to the Board of Directors for approval.

Implement the Modifications

Modifications should be implemented once the Board of Directors has approved and as soon as resources are available. If resources are unavailable, the most critical improvements, as determined by staff, should be prioritized.

Monitor route performance

Modified routes should be monitored but not analyzed until a year after changes occur. The same approach should be taken for COA, Corridor Planning, and any other comprehensive transit planning implementation. Route performance monitoring should follow the Productivity Review or other process as approved by the Board of Directors and deemed appropriate by staff.

Responding to Service Requests

IndyGo routinely receive requests to operate new service, typically out of their existing operating budget. The majority of these requests will be for low-ridership services which, if provided, would reduce the overall productivity of the transit network.

IndyGo must balance the need to serve every resident within its service area against the public demand for a highly productive, efficient, and useful transit service, given a limited budget. Service requests are evaluated to balance these demands. Details on how IndyGo staff will respond to service requests is found in the Appendix.

Updating the Service Standards

These standards should be evaluated and modified only after a Comprehensive Operational Analysis or other significant, comprehensive transit planning effort. While corridor plans may affect a single or multiple routes, they will not provide a comprehensive picture of standards for all service categories.

APPENDIX: Additional Considerations

Frequency Changes Due to Low Productivity

Productivity standards are segment-based, so they will require segment-level assessment of boardings and revenue hours. Once a route is divided into meaningful segments, automated queries of Automated Passenger Count (APC) data can be developed for ease of reporting.

Rapid and frequent routes are strongly interdependent (because their higher frequencies increase the number of available transfer opportunities). Any low-performing frequent route should be analyzed as follows before considering reducing its frequency:

- Does the route have an inner segment that connects with other frequent routes, and outer segments that do not? If so, look at the productivity of these outer segments in isolation to see if they have markedly lower productivities than the inner segment. If they do, the segmentation of the route can be revised; the outer segment can be considered for demotion to the basic or coverage service categories.
- Does the route show evidence of high transfer volumes at key network intersections? If so, assume that any service reduction will cause ridership drops not just on the route in question but also on the intersecting route(s).

APPENDIX: Responding to Service Requests

Step 1. Will the requested service increase productivity in the near term?

Does meeting this request achieve ridership comparable to that of the ridership network? This can be assessed by asking if the request improves or worsens the following features of the high-ridership network:

- **Density.** The network's stops are surrounded by a high density of residents, jobs, or other trip-generating land uses.
- **Walkability.** The network is focused on areas where it is easy and safe to walk between bus stops and the surrounding development.
- **Linearity.** The network's routes are as straight as possible, so that they are perceived as a reasonably direct path between any two points on the route.
- **Continuity.** Service does not need to cross areas with long spans of undeveloped or underdeveloped land.
- **Uniqueness.** Parallel routes are far enough apart that they do not compete for the same riders.

If a service request would not be a clear net improvement in the feature of the ridership network, then it is a coverage request. Meeting a coverage request will predictably lead to lower ridership (shifting

resources anyway from higher productivity routes), so coverage requests must be met out of the portion of the budget assigned to coverage.

Step 2. Will the requested service increase productivity in the long term?

Sometimes, developers or advocates ask transit agencies to fund a service because they believe it will help a community develop in a certain way, leading to a long-term ridership outcome. Transit agencies must view these arguments with caution, because it puts the transit agency in the position of gambling on the land use outcome using its operating budget. There is almost always a way to invest service toward a shorter-term ridership outcome, one that depends on fewer uncertain factors, so investing in these possible futures comes at a cost to potential riders in the present.

The actual policy toward a developing area must reflect the degree of likelihood that the development will occur as planned. Fully financed development on the verge of construction must be treated as existing land use, but development in earlier planning stages requires the cautions outlined above.

Step 3. Will the requested service increase the number of people or jobs near service?

If the request substantially improves the system's performance on the coverage output target, and does so at a modest cost, it should identified as a possible coverage improvement. Possible coverage improvements should be prioritized for allocation from the portion of the operating budget that is dedicated to the coverage goal. Coverage improvements on this list can be implemented if and when:

- The budget grows to the point that more total funding can be devoted to coverage.
- The Board elects to shift the policy split of the budget between ridership and coverage purposes.
- Other coverage services are deleted, possibly those that provide coverage less efficiently.

Step 4. If the answer to the above questions is "no"

IndyGo should be very reluctant to introduce services that do not satisfy one of the above tests. If there is a strong desire on the part of the Board to add the service for other reasons, options can include:

- Seeking external funding for the service, ideally from the parties most likely to benefit from it.
- As a last resort, creating a third slice of the budget, distinct from the ridership and cover slices, called "discretionary." This slice could be devoted to any services the Board desires regardless of objective policy justification.

Short term solutions when everything is no: Alternative forms of mobility, such as ride-matching, vanpools, and subsidized taxis.

Long term solutions: Coordinate with businesses, the City of Indianapolis Department of Metropolitan Development, and others to encourage people, businesses and institutions to locate along existing transit service.

APPENDIX: Updating Service Purposes

Individual routes are assigned a category based on its purpose; either to maximize ridership or provide transit access to as many jobs and residents as possible. IndyGo may wish to revise the purpose of each route; this process of this determination is outlined below:

Route Purpose

Rapid and frequent services are all ridership-justified. Coverage services are all, by definition, coverage-justified. The primary challenge is the basic category.

In certain cases:

- If there are clear reasons to expect ridership to dramatically improve soon, such as imminent development or redevelopment, provisionally assign the route to the ridership purpose. Any such imminent improvement should be an improvement in one or more of the necessary features for ridership that arise from the built form: density, walkability, linearity, and continuity.
- If the built environment is mostly unfavorable to transit (in terms of generally low density, walkability, linearity, and continuity) and shows little signs of changing for the better, assign the route to the coverage purpose.
- In a small number of cases, a route may be running at 30-minute frequency its purpose is ideally just coverage or just ridership, yet some constraint prevents it from running at higher or lower frequency.

Segment Purpose

One challenge of using frequency-based or purpose-based standards is that part of a route may be in one category and part in another.

Many routes in the recommended networks have an inner frequent segment which is clearly ridership-seeking and less frequency tails or branches which are meant to provide coverage.

In these cases, we recommend that:

- If the low-frequency portion of a route is less than 10 percent of the total revenue hours, the entire route can be analyzed in the higher-frequency category.
- Otherwise, the frequent and infrequent segments should be separated and assigned to separate categories.
- If a low frequency segment is part of a short mid-route split or minor variation in route, the route should be identified in the higher-frequency category.

Measuring Productivity of Outer Segments

Separately analyzing the productivity of inner and outer route segments (where the inner segment has higher frequency) requires an extra step. One analytical method is as follows:

- Ridership: Using APC data, identify the total inbound boardings and outbound alightings that occur on the *outer* segment. Add these two numbers together to get the total ridership that makes some use of the outer segment (This method counts each trip once and does not double-count trips that are entirely within the outer segment. If there are difficulties with counting alightings, simply count the total inbound boardings and double, presuming most trips are round trips, to capture the trips alighting in the segment.)
- Subtract that number from the total route ridership to get boardings assignable entirely to the inner segment.
- Cost (revenue hours): Using a costing tools to estimate the revenue hours required to operate the frequent inner segment, as if the outer segment did not exist. Assign those revenue hours to the inner segment.
- Assign the difference between the inner segment's revenue hours and the route's full cost to the outer segment.
- Calculate productivity of the outer segment by dividing its boardings by its revenue hours.

When evaluating the purpose of a Basic service's segments, consider the following:

- If the segment's productivity is in the range of rapid or frequent services, then it is probably a ridership segment.
- If the segment's productivity is within the range of the other coverage routes or segments, then it is probably a coverage segment.
- If ridership is clearly very different on one part of a segment than another, divide it into smaller pieces and think about them separately. (Sometimes this process inspires the redesign of a route, so that high-ridership segments can be served by a more frequent route.)

When a 30-minute segment is assigned to a ridership or coverage purpose, it should be reviewed in the following terms:

- Half-hourly segments categorized as ridership may be in route for promotion to the Frequent network as resources permit.
- There may be cases—such as segments driven by a strongly day-time-only or peak demand – where a 30-minute base frequency may yield very high productivity, and productivity would fall if they were promoted.
- There may be extenuating circumstances that argue against increasing or decreasing the frequency of a basic route. For example, reducing the frequency might save no money, due to the route's cycle time; or the frequency may be created by hourly branches at the end of the segment whose frequency should not be reduced to bi-hourly.

APPENDIX: Assessing Compliance with the Ridership/Coverage Split

1. Segmenting routes into pieces that are 100 percent dedicated to ridership, and 100 percent dedicated to coverage. This would be done according to the segmentation of routes above, but it can be a complex and time-consuming task.
2. Adhering rigorously to the service standards, and using route assignments to service categories to estimate the budget split.
   a. Revenue hours of the frequency category, plus 80 percent of the revenue hours of the basic category, add up to 80 percent of total revenue hours.
   b. Revenue hours of the coverage category, plus 20 percent of the revenue hours of the basic category, add up to 20 percent of the budget.

A word of caution: there is no way to completely remove professional judgement and experience from the process of identifying transit services' purposes, no matter how many factors and numbers in the spreadsheet. Therefore, all estimates of the percentage split are rounded to the nearly 10 percentage points. Further precision is misleading the public about the degree of objectivity that is possible in transit planning.