IndyGo Forward
Volume II: Final Report

Prepared for IndyGo and the Indianapolis MPO

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INDYGO FORWARD

Executive Summary

In 2014, the Indianapolis Metropolitan Planning Organization (MPO) hired a team led by Jarrett Walker + Associates to help IndyGo develop short- and medium-term transit service plans.

This effort is known as IndyGo Forward. The products of this effort include:

- A small set of 2015 service redesigns in downtown and the inner north side, motivated mostly by the new Downtown Transit Center but also by the opportunity to make some other low-cost, high-value improvements.
- Conversations with key stakeholders, agency partners, and the IndyGo Board about how to balance conflicting goals for transit service.
- New policies that guide IndyGo's transit service design and planning.
- A series of networks for 2021 that show how the IndyGo network would be revised to incorporate a range of Indy Connect rapid transit services after a referendum. These networks also show the impact of a range of possible funding levels for local service.

This report is Volume II of the *IndyGo Forward Report*. Volume I was first published in August 2014, and is called the *Existing Conditions Report.* For a review of IndyGo's current performance, see Volume I.

The IndyGo Forward planning process began with a conversation among IndyGo staff, key stakeholders, the public, and agency partners about the purpose of transit in Indianapolis.

While some aspects of transit planning are technical with a "correct" answer, there are no correct answers to a question about transit purpose. It is a question of values, one that could only be answered by the people of Indianapolis.

Ridership or Coverage?

Pursuing ridership involves thinking like a business that wants to maximize its customers per unit of cost. The first thing such a business does is choose which markets it will enter based on where it believes it can succeed. In transit terms, this would mean deploying all of the service in places where the greatest number of people are most likely to use it.

If the IndyGo system were designed for maximum ridership or maximum farebox revenue, it would focus only on areas where the built environment meets the necessary conditions for high ridership. The system would have far fewer routes, but they would be much more frequent.

Yet ridership is not the only goal of public transit systems. While private transit companies may focus on profits, and therefore on exclusively high-ridership routes, *public* transit is almost always expected to meet other goals.

IndyGo's hourly routes, which extend across areas where the necessary conditions for ridership are not present, reflect an expectation that service should be provided in some places regardless of ridership. These services can help IndyGo meet what we call a *coverage goal*, which is the opposite of a *ridership goal*.

A coverage goal is aimed at getting a little bit of service to everyone, in order to provide lifeline access or an equitable distribution, regardless of whether the transit service gets much use.

Transit agencies often fight the misperception that because they are delivering on one goal, they are failing at the other.

For example, a low-ridership route in a low-density neighborhood may be providing an important social service in support of a coverage goal. The route is not failing to meet

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a high ridership goal because its goal was never high ridership.

Below is an illustration of how ridership and coverage goals conflict with one another, due to fundamental geometry and geography.

In the fictional town shown in Figure 1, the little dots indicate dwellings, commercial buildings, and other land uses while the lines indicate roads. The buses in the corner represent available resources. Most of the activity is concentrated around a few roads, as in most towns.

A transit agency pursing only a ridership goal would focus high frequency only where density (and other necessary features, like straight roads) are high, resulting in a network like the one in Figure 2.

On the other hand, a transit agency in pursuit of only a coverage goal would spread out services so that every road had some bus service, as in the network in Figure 3. As a result, all routes would be infrequent, even those on the main roads.

In these two scenarios, the town is using the same number of buses. These two networks cost the same amount to operate, but they deliver very different outcomes.

On a fixed budget, designing transit for ridership or coverage is a zero sum game. In the networks below, each bus that runs down a main road to provide high frequency service is not running on the neighborhood streets providing coverage, and vice versa. While an agency can pursue both ridership and coverage, it cannot do both with the same dollar.

The drawings below also make clear that there is a relationship between coverage and complexity. Networks offering high levels of coverage – a bus route running down every street – are naturally more complex.

In this example, any person could remember the very simple ridership network, since it consists of just two routes running in straight lines at high frequency. The coverage network would be harder to memorize, requiring people to consult a map (to

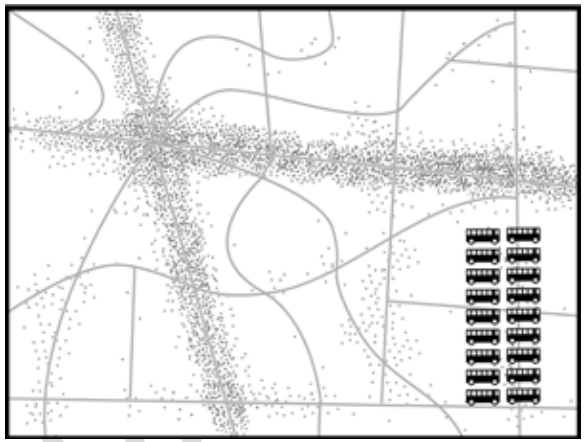

Figure 1: Roads and density in a fictional town.

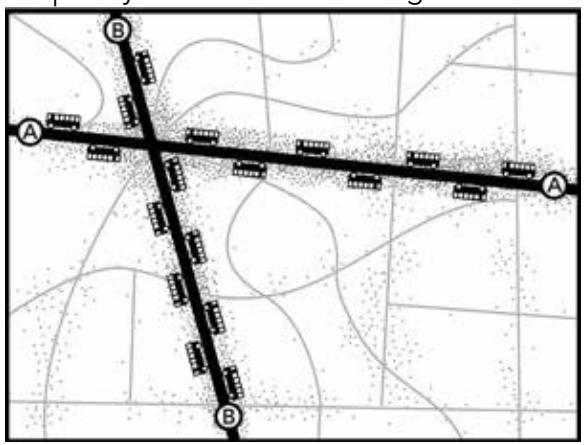

Figure 2: A purely ridership network.

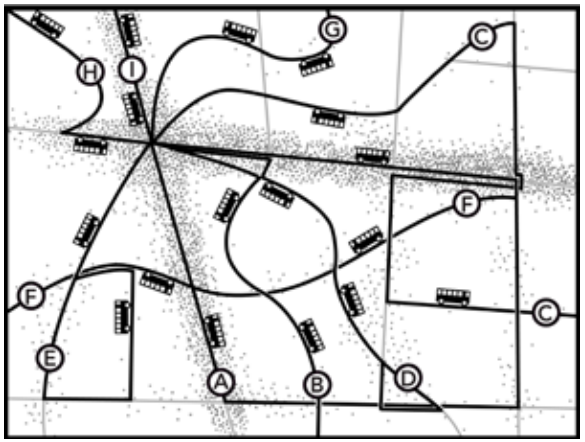

Figure 3: A purely coverage network.

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understand the routing) and a schedule (to catch these infrequent services).

Similarly, in real-life transit networks, overall complexity often tracks with the transit agency's efforts to provide coverage services.

In most transit networks, some individual routes have, of course, been designed for a mix of ridership and coverage goals. One section of a route may run straight between inner neighborhoods and downtown, and that section is designed to attract riders. The tail of the route, on the other hand, may wiggle and loop around in low-density areas, and that section is not expected to attract riders – its purpose is to provide coverage.

Yet very few transit agencies are explicit with themselves, with their riders, and with the public about which routes (or parts of a route) are pursuing ridership and which are providing coverage.

In meetings of a Stakeholder Advisory Group, at public meetings, and in surveys, IndyGo asked people how the agency should balance these important but conflicting goals. (Public meeting responses to this question are shown in Figure 4, below.) The comments IndyGo heard from the public and its stakeholders coalesced around an approximate balance of 80% of IndyGo's effort maximizing ridership, and 20% providing coverage regardless of low ridership. This is much further toward ridership than the current system, and explains why most of the future transit scenarios presented in this report show reductions in low-ridership service, even with more funding for transit.

The service changes recommended for the end of 2015 would move IndyGo's transit network a small step towards this future 80/20 balance, by organizing transit routes that provide more frequent service near large numbers of people and jobs.

For 2021 and beyond, the networks are designed at different levels of funding and around different Indy Connect rapid transit lines, but all of them are built to balance IndyGo's 80/20 mix of ridership and coverage: that is, whatever the budget, 80% of it is devoted to high-ridership services while the other 20% is used to provide coverage to as many additional residents, jobs, and existing riders as possible.

Balance of Ridership and Coverage goals	People at public meetings who would choose that balance for IndyGo
90%/10%	46%
80%/20%	21%
70%/30%	13%
60%/40% (IndyGo's current balance)	10%
50%/50%	10%

Figure 4: At public open houses in 2014, people were asked how they would like IndyGo to balance its conflicting ridership and coverage goals. Their responses clustered around even higher emphasis on ridership than responses of the Stakeholder Advisory Group, whose members preferred an 80%/20% split.

Coverage Service and Paratransit Costs

Paratransit is required by law to serve people who cannot use fixed-route services because of a disability.

However, federal law only requires that paratransit be offered where fixed route

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service is offered, specifically, within 3/4 miles of fixed routes. Today IndyGo provides Open Door to all of Marion County, in excess of federal requirements.

Paratransit is very expensive on a per-rider basis compared to fixed route transit. IndyGo's cost per boarding on Open Door is about $35, compared to $5 per boarding on fixed routes.

Because of paratransit's very high costs, decisions about whether it is provided only where required by law, or voluntarily over larger areas, are incredibly consequential for any transit agency. Even small increases in the number of people using Open Door can have a huge impact on IndyGo's budget, and can come at the expense of fixed route services and ridership.

If IndyGo decides, sometime before 2021, to provide paratransit only where required, the costs of the future year scenarios recommended in this report would not change from our estimates but the transit budget available to implement them would likely grow.

The federal law that requires paratransit within 3/4 mile of fixed route transit service does not take into account the frequency of the fixed route. Whether it runs every 15 minutes, or every 120 minutes, it still triggers a paratransit requirement.

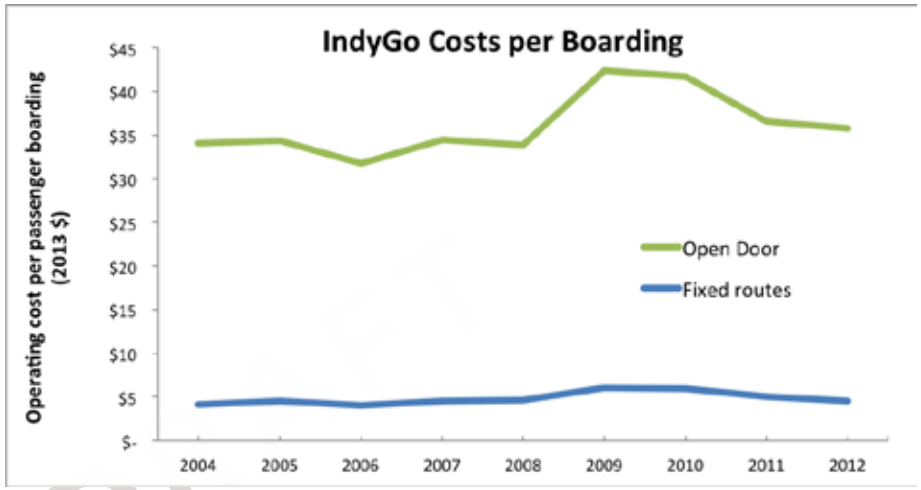

Figure 5: IndyGo's costs per passenger boarding on fixed route and paratransit (Open Door) services, 2004-2012, in inflation-adjusted dollars.

Because the federal paratransit requirement is frequency-blind, IndyGo would also see a decrease in the size of its required paratransit program if the number of infrequent lines on its transit map decreased. Reducing the amount of coverage in the IndyGo network in pursuit of higher ridership would have the side effect of reducing the size of the required Open Door service area and, with it, the cost.

However, if IndyGo continues to provide Open Door voluntarily to all of Marion County, the size of the fixed-route coverage network will not affect the size and cost of the Open Door program.

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Outline of this Report

This report covers the following:

Chapter 1. 2015 Service Plan

This plan, for implementation when the downtown transit center opens, revises downtown routings to focus on the new center but also recommends some improvements in the inner north area. These improvements rearrange some very complex overlapping routes in the area between Capitol and College Avenues between downtown and Broad Ripple, and also improve service in Broad Ripple and to Butler University.

Our recommendation to prioritize these no-cost changes in these particular locations does not imply that they are more important than other changes shown in the future scenario recommendations, or more important than other parts of town Rather, it reflects the ease with which these improvements can be made before or at the same time the Downtown Transit Center opens, at little or no extra cost.

Chapter 2. Future Service Plans

If and when the Indy Connect rapid transit network is created, the IndyGo network will have to be revised to connect with it. This chapter presents network plans for that eventuality, including several scenarios with different levels of resources arising from the referendum. Scenarios focus on 2021, the first year that new services would be fully in place if a referendum passed in 2018 or sooner. (In practice, Indy Connect lines might appear as limited-stop bus services before all their infrastructure is complete.)

These future plans also introduce a separate issue, the impact of shifting the network to devote 80% of the operating budget to high ridership services. The 80/20 balance, as discussed above, requires removal of some low-ridership coverage services and a shift to ridership services.

All scenarios presume that 80% of resources are devoted to ridership, 20% to coverage. Scenarios with higher funding have more resources for both, thus fewer coverage services need to be cut – and less outcry from people who depend on those services can be expected. Scenarios with lower funding must cut coverage services more deeply to achieve the 80/20 split.

The 80% of service devoted to ridership is used to radically increase the range of situations in which transit is useful and the range of people who will find transit a good option. To do this cost-effectively, however, it is necessary to focus these improvements on areas where high transit demand can be expected, which generally means areas that are dense, walkable, and that allow transit to follow reasonably straight paths. These three factors explain the strong focus on the inner city grid area, where the street network was laid out before the car became dominant.

In these areas, the 2021 plans begin to create a high-frequency grid system that allow easy anywhere-to-anywhere travel. Frequencies rise on many other corridors making service more useful for a wider range of purposes, and also making connections easier so that people can reach a wider range of destinations efficiently. New connections appear between the inner city and destinations along 82nd and 86th Streets.

Again, the degree to which these improvements are achieved depends heavily on the level of resources devoted to local bus services as a result of the referendum, and also on whether the proposed 80% ridership/20% coverage split is eventually adopted and implemented by IndyGo and the Council.

Chapter 3. Financial Plans

This chapter provides financial plans for each of the 2021 scenarios. These plans

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show existing and projected funding sources for each year between now and full implementation of the scenarios in 2021, and how these would cover both operating costs and basic projected capital needs.

Note that Indy Connect's rapid transit lines and their operations sit outside of these financial plans, as they have their own financial planning process.

One of the important findings of the financial planning process is that the increase in cost of providing transit service in Indianapolis is cause for concern, and makes planning for future investments more challenging.

Chapter 4. Implementation

Shifting IndyGo to focus more heavily on the ridership goal could happen all at once or gradually. Shifting at once, prior to the referendum, would grow ridership (and farebox recovery) before a public and political case must be made for additional investments in transit. It would also do the most to support inner city redevelopment, which ridership service tends to do, because it logically concentrates on inner city markets where the geometric conditions for transit are most favorable.

However, there is a major downside. Making the shift without significant new resources means that existing low-ridership coverage services will have to be cut quite substantially, and outcry from existing riders in these areas should be expected. Our No New Funding scenario in *Chapter 2: Future Service Plans* illustrates what this would look like.

Chapter 4: Implementation talks through this tradeoff in more detail, considering the pros and cons of shifting to a greater ridership focus before, or after, a successful referendum.

Chapter 5. Service Standards

Once service changes are made, they should be monitored according to measures that reflect their intended purposes. This more technical chapter outlines proposed performance standards for IndyGo.

A key new idea presented here is that services whose goal is ridership should be judged based on their ridership per unit cost. Coverage services, for which high ridership is not the purpose and not a realistic outcome, should be judged based on success at achieving coverage goals, such as providing some transit access to as many people and jobs as possible.