

Metro Transit Network Redesign

Draft Plan Report

JANUARY 28, 2022



JARRETT WALKER + ASSOCIATES



Table of Contents

- 1 Introduction to the Draft Network Plan..... 3**
 - What is the Metro Transit Network Redesign? 4
 - Existing Network 5
 - Proposed Draft Network..... 6
 - Proposed Service Levels by Time of Day 7
 - Equity in the Draft Network Plan..... 8
- 2 How did we get here? 9**
 - How did public input shape this plan? 10
 - Quick Comparison: Existing Network vs. Alternatives Considered vs. Draft Plan 12
- 3 What’s in the Draft Plan?..... 13**
 - Design Principles..... 14
 - Proposed Draft Network Map..... 15
 - High frequency in many more locations..... 16
 - Faster and more direct travel across Madison..... 17
 - Service to low-income people and the places they need to go. 18
 - Longer walks, and some areas left with peak-only service. 19
 - Proposed Service on Weekdays vs. Evenings and Weekends..... 20
 - Detailed Frequencies by Proposed Route..... 21
 - Key Transfer Locations 22
 - New Infrastructure Requirements 23
 - Local Network Changes - Central Madison..... 24
 - Local Network Changes - Northwest 25
 - Local Network Changes - Southwest 26
 - Local Network Changes - South..... 27
 - Local Network Changes - East 28
 - Local Network Changes - North 29
- 4 Outcomes of Implementing the Draft Plan..... 30**
 - Slightly fewer people near any bus stop. Many more people near frequent service..... 31
 - Proximity to Transit - People of Color and People with Low Incomes..... 32
 - Proximity to Transit - Seniors and Youth 33
 - Summary of the Proposed Draft Plan’s Impacts on Proximity to Transit..... 34
 - Access - What makes a transit network useful? 35
 - Access - Travel Time Maps 36
 - Travel Time Map: Downtown Example..... 37
 - Travel Time Map: North Madison Example..... 38
 - Evaluating Change in Access to Jobs Throughout the City 39
 - For most people, a large increase in jobs accessible by transit within 45 minutes. 40
 - Change in Job Access - People of Color 41
 - Change in Job Access - People with Low Incomes 42
- 5 Conclusion and Next Steps..... 43**
 - Summary of Key Outcomes..... 44
 - Next Steps 45
- Appendix A: Additional Analysis on Proximity to Transit..... 46**
- Appendix B: Phase 2 Community Engagement Report 47**
- Appendix C: Travel Time Maps 48**

1 Introduction to the Draft Network Plan

What is the Metro Transit Network Redesign?

A reboot of Madison's public transit network.

This plan proposes an overhaul of the bus network operated by Metro Transit in Madison and some of its neighboring communities.

The Proposed Draft Network includes a completely new set of routes. These routes have been designed to better meet the goal of connecting people with the places they need to go in a reasonable amount of time.

Why change the whole bus network?

Metro Transit serves many vital needs and its bus routes reach nearly all Madison's neighborhoods. But it's also clear the current network doesn't conveniently serve most trips. This is in part because Metro service has tended to:

- Favor extensive coverage over direct and frequent service. As a result, **many areas are served once an hour or less**, sometimes on one-way loops. Many routes require **transfers for short trips**, and **some routes change completely on weekends**.
- Favor peak-hour trips to Downtown over all-day service, especially before the pandemic. As a result, **trips by transit can take much longer outside peak hours, and between outlying locations**.

What are the proposed changes?

This Draft Plan proposes a network centered around a different set of choices.

- **More frequent and direct routes** that connect many people to many places.
- **Consistent service across the day and week.** Fewer peak-only routes, more midday frequency, and routes that follow the same path any time they are in operation.
- To make this possible with available resources, service would **continue to serve the same areas, but sometimes require longer walks.** A few areas would be served at peak hours only.

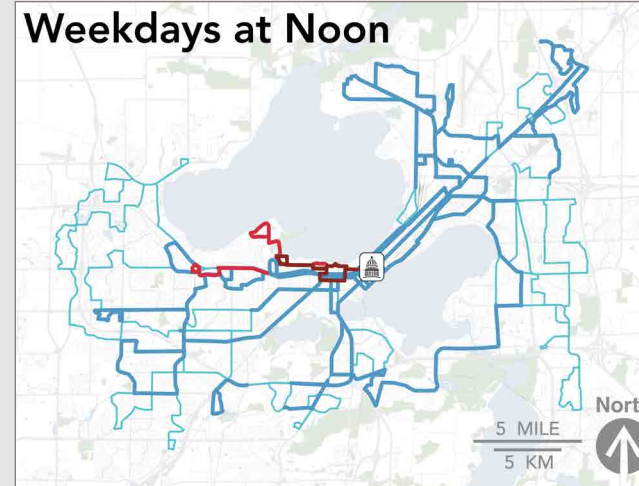
How does the redesign relate to Metro Rapid Bus Rapid Transit (BRT)?

The Transit Network Redesign is an opportunity to take full advantage of planned BRT infrastructure, and make sure the benefits of future BRT routes extend beyond the initial East-West route to the whole city.

Metro Rapid BRT envisions infrastructure improvements in three corridors: East-West, North-South and Middleton. This Draft Plan envisions more frequent and direct service in those corridors to take advantage of BRT improvements.

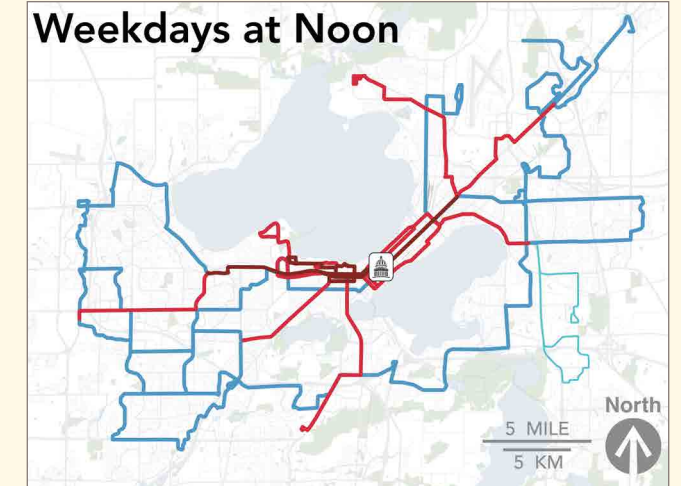
Proposed Routes A (East-West) and B (North-South) would run every 15 minutes or better, 7 days a week, reaching many of Madison's busiest destinations. Complementary frequency investments on other routes will help maximize the value of service in the BRT corridors, by allowing passengers throughout Madison to connect more quickly and easily across the city.

Existing Service



- Most routes every 30 to 60 mins on weekdays.
- Outlying areas are served by routes to Transfer Points, where people must switch buses.
- Many outlying areas are served by one-way hourly loops that make service confusing and difficult to use.
- 79% of Madison residents are within a 1/4-mile walk of a bus stop with all-day service.
- The median Madison resident can reach 24,000 jobs within 45 minutes by transit and walking.

Proposed Draft Network



- Most routes every 15 to 30 minutes on weekdays. Some routes less frequent.
- Pre-BRT East-West and North-South routes every 15 minutes, seven days a week.
- Routes would be long, continuous, two-way and connect directly to major destinations. Fewer transfers required.
- 73% of Madison residents within a 1/4-mile walk of a bus stop with all-day service.
- The median Madison resident can reach 44,000 jobs within 45 minutes by transit and walking.

Key Assumptions

BUS RAPID TRANSIT

The Draft Network assumes Metro Rapid BRT infrastructure improvements as a key element. The plan assumes the East-West BRT corridor will match the most recent plans, and anticipates the most likely alignments of the North-South and Middleton BRT corridors.

TIMELINE AND OPERATING BUDGET

The Draft Network has been designed for implementation in mid-2023, assuming Metro Transit will have the resources to restore the total amount of service provided to 2019 levels. However, the Draft Network would reallocate service to allow for fewer, more frequent routes.

Existing Network

Figure 1, at right, is a map of Metro Transit's network in early 2021. Line colors indicate how often the bus comes, on weekdays at midday.

In existing service, nearly all routes run every 30 to 60 minutes, and a few run only at peak times or on weekends. In peripheral areas, the network is organized around four timed Transfer Points.

This map reflects the general structure of Madison's bus network since 1998, but also pandemic service changes that significantly reduced peak-hour service and suspended some low-frequency all-day routes.

Access to jobs

The median Madison resident can reach **24,000 jobs** within 45 minutes by transit and walking.

The median person of color can reach **21,000 jobs** within 45 minutes by transit and walking.

The median low-income person can reach **80,500 jobs** within 45 minutes by transit and walking.

People near transit

79% of Madison's residents are within 1/4 mile of all-day service.

11% of Madison's residents are within 1/4 mile of service every 15 minutes or better.

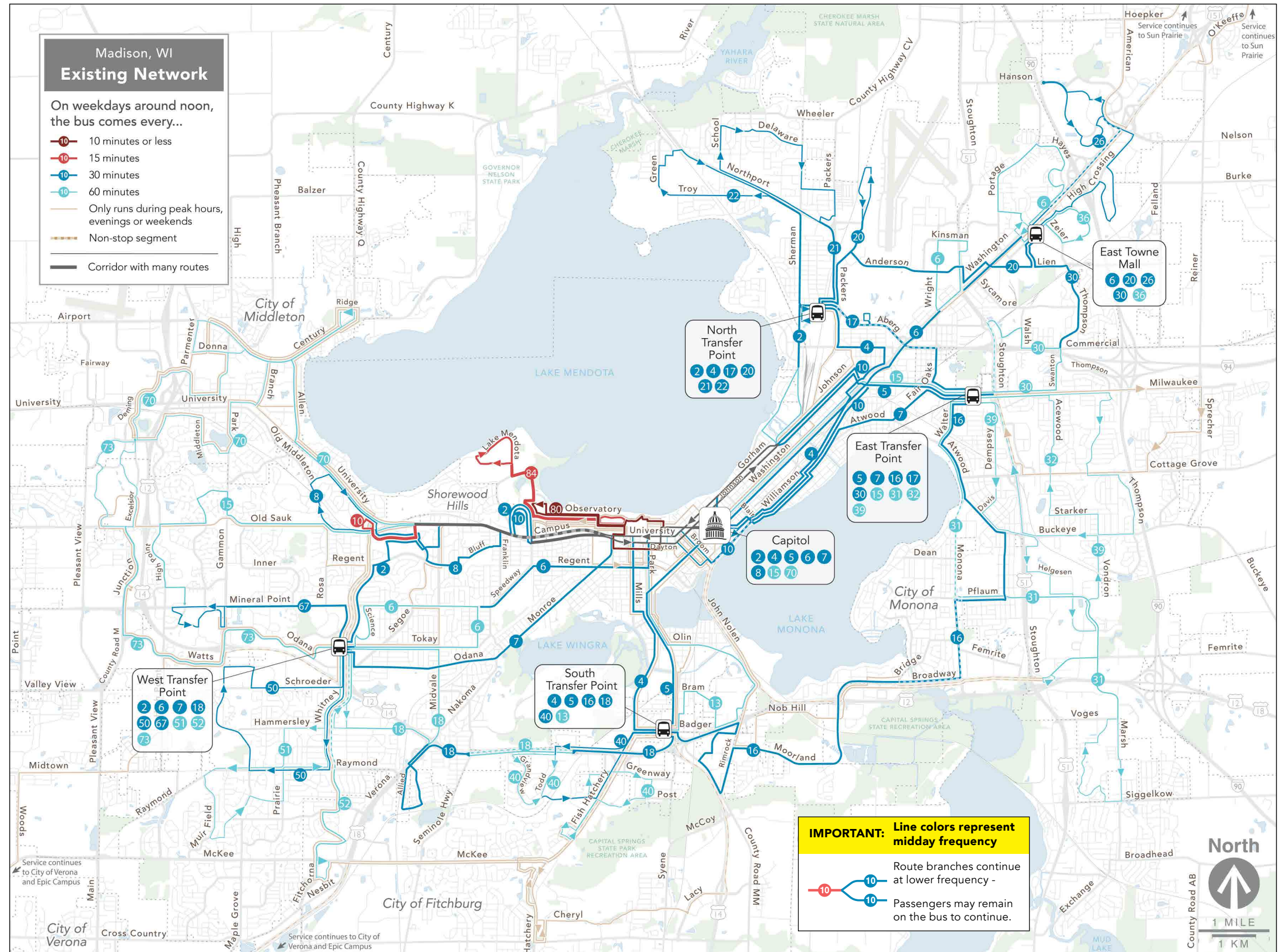


Figure 1: Metro Transit network of bus routes, as of early 2021. The network is centered around Downtown Madison, where many routes converge. Most outlying areas are served by routes that connect to a local transfer point, where passengers can transfer to routes going Downtown or across town.

Proposed Draft Network

Figure 2, at right, is a map of the Draft Network. **This network would restore the total amount of service Metro Transit provided in 2019, while consolidating bus service onto fewer routes.**

Four routes would run every 15 minutes or better on weekdays, and most services would go through Downtown. This would reduce wait times and allow more direct travel with fewer transfers. Three routes would connect peripheral areas to each other, allowing some trips to bypass Downtown.

However, some people would have to walk farther to service, and some neighborhoods would not receive all-day service.

Access to jobs

The median Madison resident could reach **44,000 jobs within 45 minutes** by transit and walking, about an **80% increase**.

The median person of color could reach **40,500 jobs within 45 minutes** by transit and walking, about an **80% increase**.

The median low-income person could reach **97,500 jobs within 45 minutes** by transit and walking, about a **20% increase**.

People near transit

73% of Madison's residents would be within 1/4 mile of all-day service, compared to 79% today.

42% of Madison's residents would be within 1/4 mile of service every 15 minutes or better, compared to 11% today.

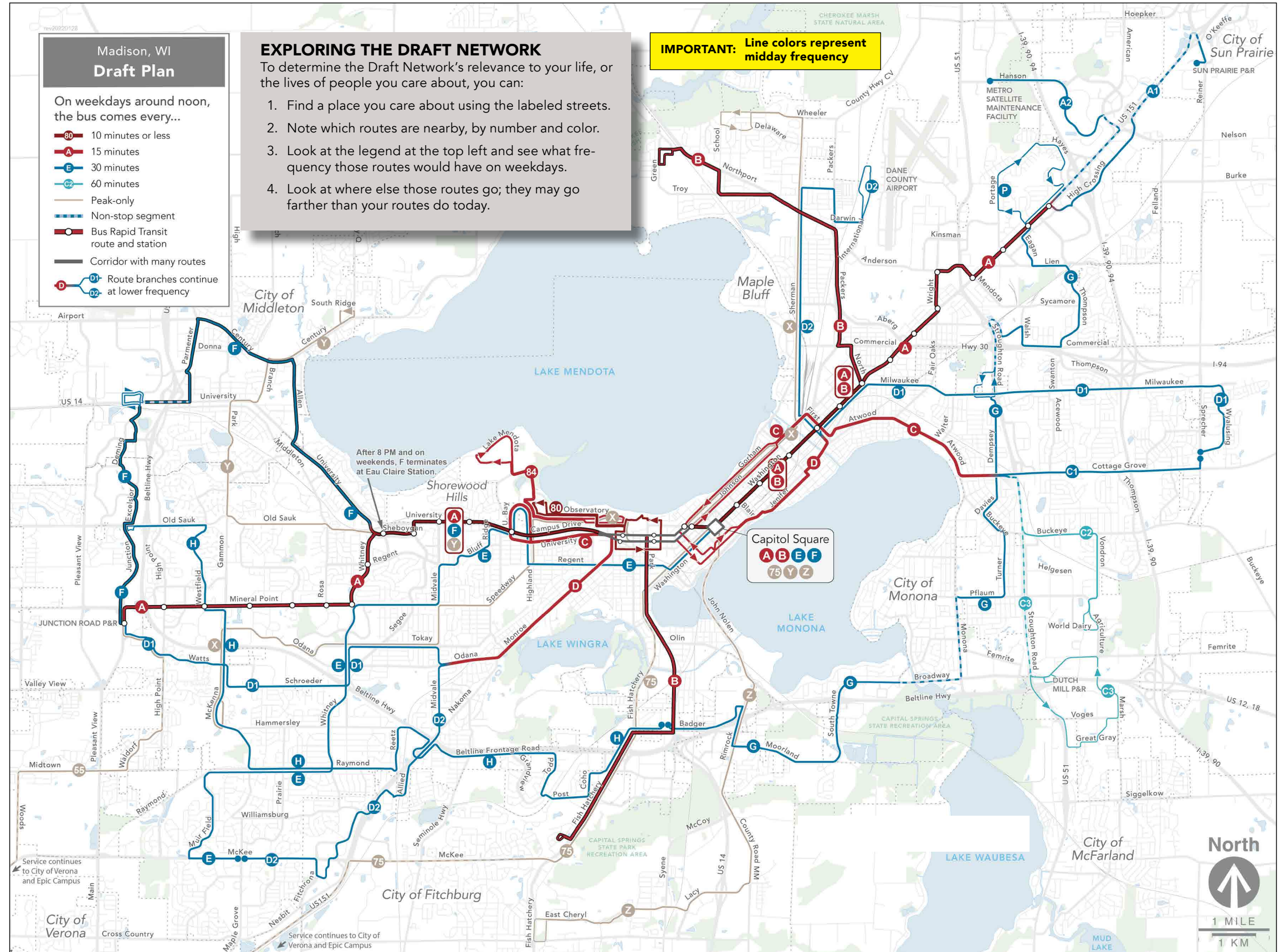
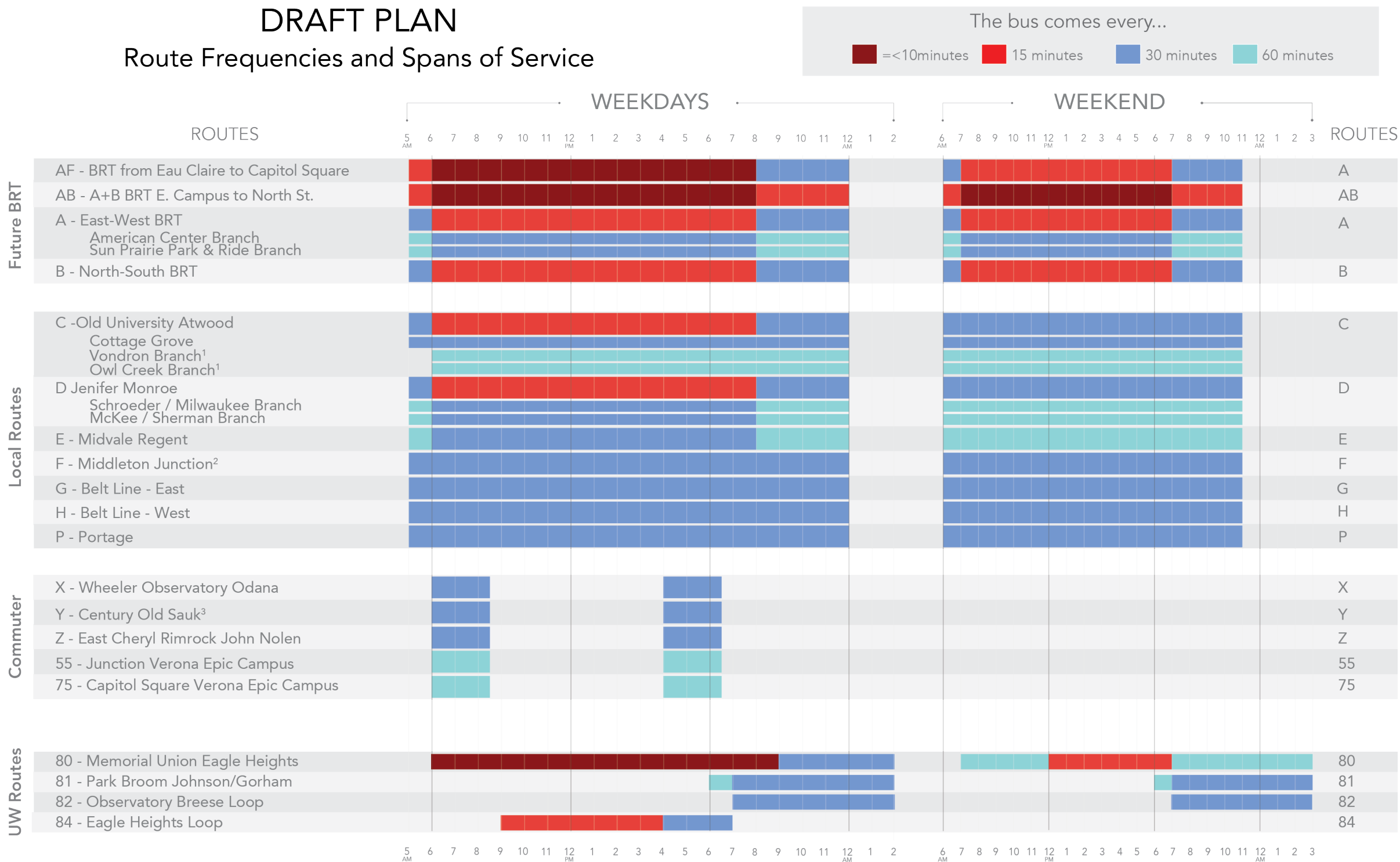


Figure 2: In the Draft Network, most transit service would be concentrated at higher frequencies and on more direct paths along corridors where many people live and work. This would allow for shorter waits and faster travel for many people. However, some hourly and peak-only service would remain to cover more isolated areas.

Proposed Service Levels by Time of Day



Key Differences with Past Service

1. More midday and early evening service, less peak service. Prior to COVID-19, Metro Transit provided twice as much service at 8 AM as at noon. This plan would increase service in the midday and early evening, by limiting added service at rush hours.

2. Seven day a week frequent service on future BRT Routes. This plan would restore pre-COVID service amounts in areas to be served by Routes A, B and F, but make service more even across the day and week. About 36% of Metro Transit service was provided in the BRT corridors in 2019, compared to about 35% of service in this Draft Plan.

3. Fewer peak-only routes to Downtown. Metro Transit historically provided one-seat service to Downtown from nearly everywhere in Madison at rush hour, but far fewer areas at midday. This plan would provide all-day one-seat rides to Downtown from most areas, and more consistent all-day service to areas near Belt Line service (Routes G, H and P).

Notes:

1. Route C service from Vondron and from Owl Creek would be direct to downtown during weekdays from 6 AM to 8 PM. At all other times, this service would require a timed connection at Atwood and Dempsey.

2. Route F continues as a BRT route to Capitol Square on weekdays from 6 AM to 7 PM. At all other times, F connects with BRT A at Eau Claire Station.

3. Route Y continues as a BRT route to Capitol Square on weekdays during the AM and PM rush hours.

UW routes are listed here for information only. No changes to Routes 80, 81, 82 and 84 are proposed as a part of this plan.

Figure 3: This chart shows how often the buses would run on weekdays and weekends in the Draft Network Plan. All routes would run seven days a week, from 5 AM until 12 AM on weekdays and from 6 AM to 11 PM on weekends. Higher frequencies would be maintained from 6 AM to 8 PM on weekdays on most routes. Routes A and B would maintain service every 15 minutes seven days a week.

Equity in the Draft Network Plan

What equity issues does this plan address?

The most frequent complaints to Metro Transit relate to the experiences of riders in peripheral areas of Madison. These riders are disproportionately low-income and people of color. For many:

- Travel times are too long, because of long waits and unnecessary transfers.
- Service is confusing. Routes that change on weekends cause riders to wait at wrong stops or board the wrong bus.
- Long waits in the cold, and concerns about safety at Transfer Points.
- One-way loops take people on slow, circuitous paths even when travelling short distances.

What would change with this plan?

The project team has addressed these issues in the Draft Network by designing service with:

- **Fewer transfers.** Longer routes would take people directly Downtown and across town.
- **Less waiting.** More people and jobs would be near service every 15 to 30 minutes.
- **More consistent service.** Less service in the peaks and more mid day compared to 2019.
- **Less confusion.** Fewer loops, straighter paths, and the same routes would run every day.
- **More direct service within outlying areas,** connecting neighborhoods to key destinations rather than Transfer Points.

How would this improve people's lives?

If the Draft Network were implemented, **most people in poverty and people of color would:**

- **Have faster access to more places.** 62% of people of color and 76% of people in poverty would have access to over +10,000 more jobs in 45 minutes or less by walking and transit.
- **Live near consistently useful service.** 55% of people of color and 77% of people in poverty would live within a 1/2-mile walk of service every 15 minutes or better on weekdays. This service would keep running every 30 minutes or better on weekends, and after 8 PM.

The map at the left shows the Proposed Draft Network's service as it relates to areas with many low-income people.

Lines represent proposed service. On weekdays:
Red lines would come every 15 minutes or better.
Dark blue lines would come every 30 minutes.
Light blue lines would come every 60 minutes.

The map at the right shows how job access would change for people with low income.

Each dot represents one person with low income. Within 45 minutes, including walking and waiting:
Green dots are people with access to **more jobs**.
Pink dots are people with access to **fewer jobs**.

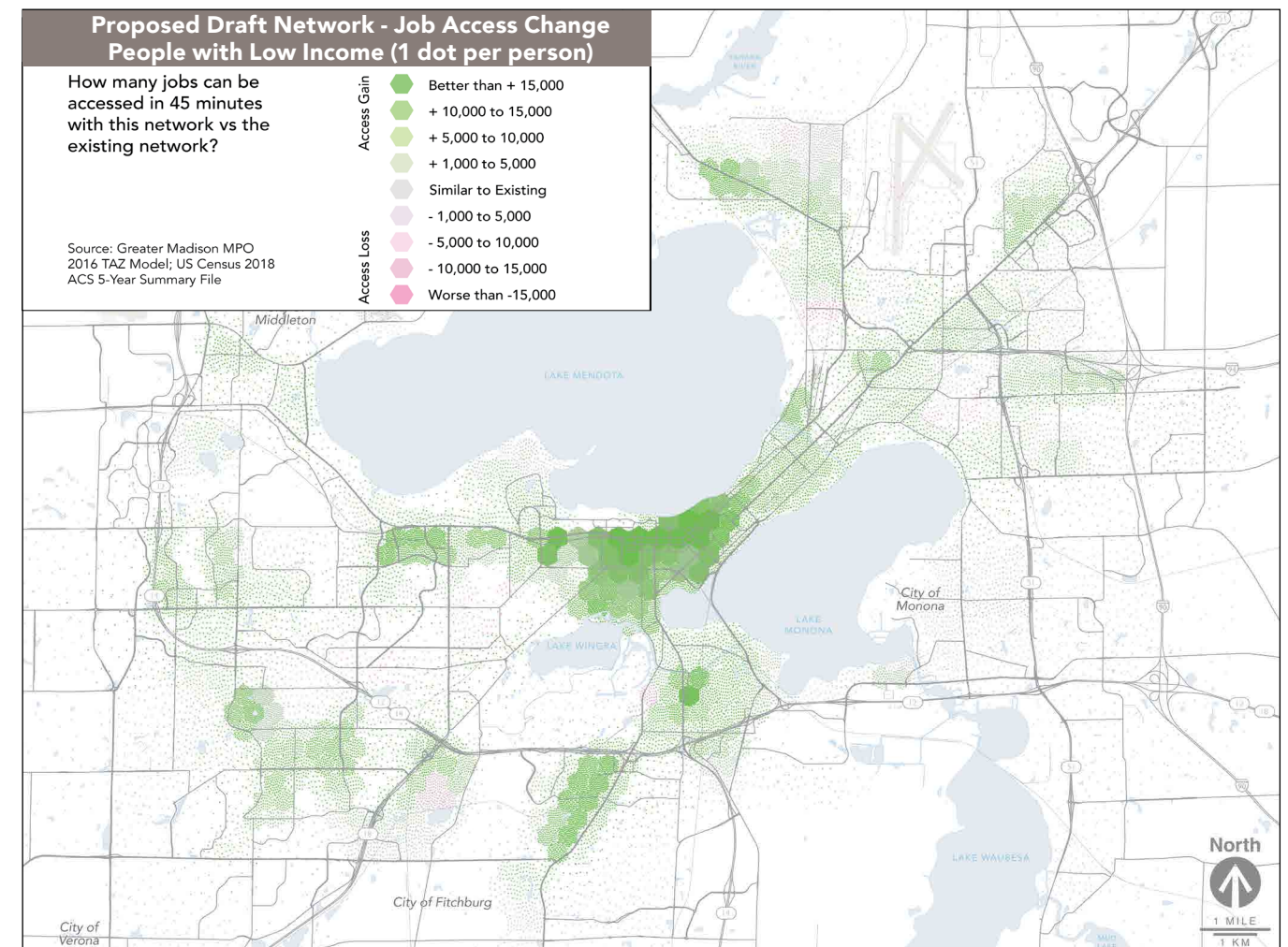
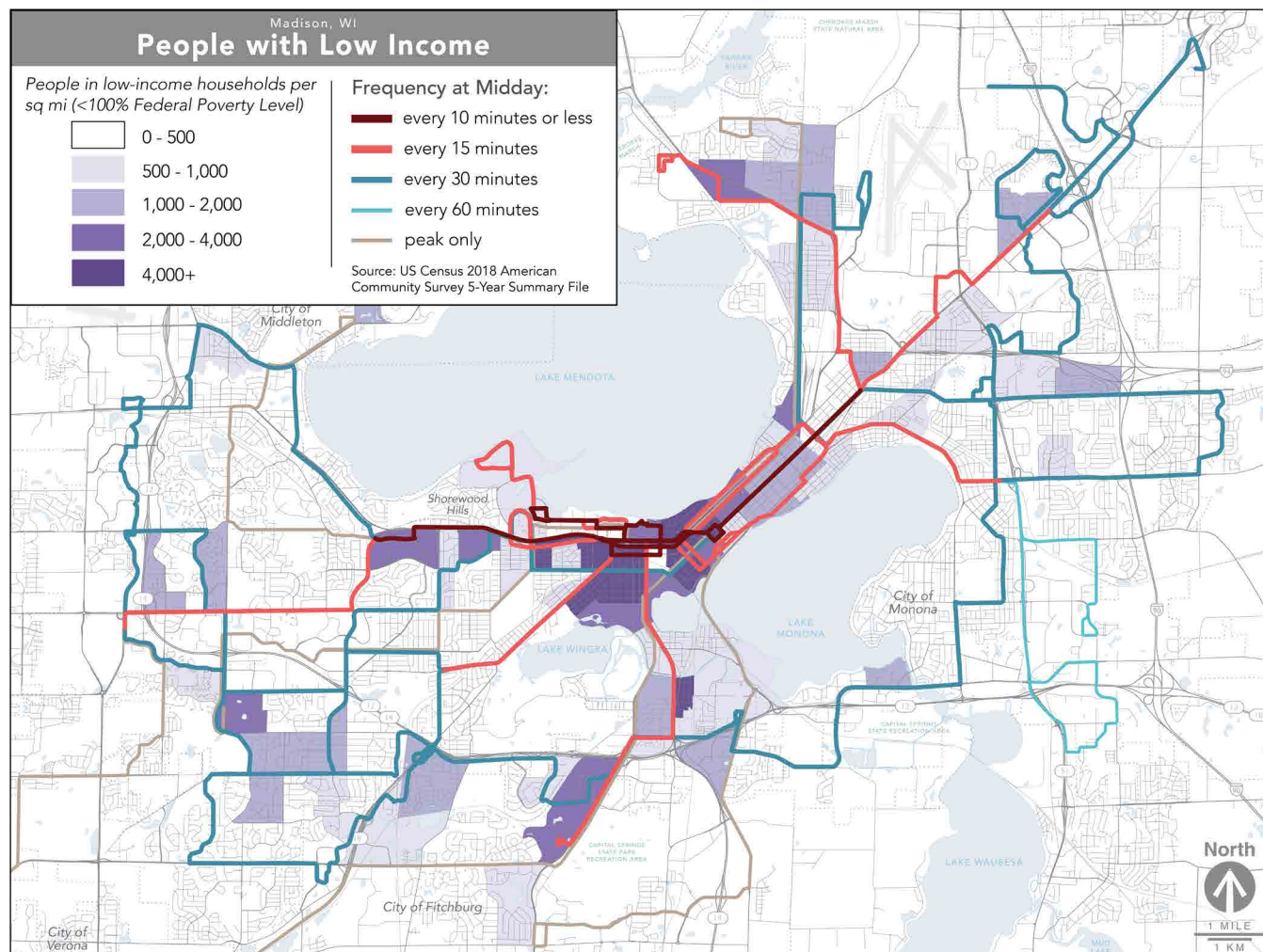


Figure 4: Map comparing the density of low-income residents with proposed midday service levels.

Figure 5: Map showing where low-income residents live, and how access to jobs by transit and walking within 45 minutes from those locations would change under the Draft Plan.

2 How did we get here?

How did public input shape this plan?

Phase 1: Defining Key Issues

The Draft Network is the result of a year of study and outreach. In early 2021, the [Choices Report](#) outlined issues with existing service, such as:

- The Existing Network reaches the vast majority of people and jobs in Madison, but very few people experience frequent service.
- Transit trips from outlying areas are often long and complicated, due to low frequencies and the Transfer Point system.
- There is much less service on weekends and evenings than on weekdays in the daytime.

Most people can easily walk to a bus stop, but very few people have access to service they can rely on every day for many needs. This is especially true for low-income people of color, who are more likely to live in outlying areas and to hold jobs that include evening or weekend shifts.

Priorities and Trade-Offs

In designing a new network, the Choices Report outlined the following trade-offs:

- **Ridership vs. Coverage.** Is it more important to concentrate service onto a small number of very frequent and useful routes, or to provide service to as many places as possible?
- **Walking vs. Waiting.** Can Metro Transit ask passengers to walk a little bit farther to service, if service were more frequent?
- **One-Seat Rides vs. Transfers.** Should Metro Transit reduce the use of Transfer Points, even if it means a even stronger focus on Downtown and the University of Wisconsin?
- **Peak vs. All Day Needs.** Coming out of the pandemic, should Metro Transit reinvest in rush hour service, or provide consistent levels of service throughout the day?

In the context of Madison, the first three of these trade-offs are interdependent. For example:

- Within a fixed operating budget, Metro Transit can't operate a more ridership-focused high-frequency system without requiring some people to walk farther to service.
- In Madison, efficiently achieving the highest possible coverage relies on the continued use of Transfer Points, because these make it possible to group together all riders coming from a certain area regardless of destination.

As a result, when presenting these trade-offs to the public, the project team focused primarily on ridership vs. coverage.

Public Outreach

From January to June 2021, the project team engaged the community on their priorities for transit. This took place through an online survey, meetings with the public and community groups, and intercept interviews. Key findings included:

- **The community is ready for change.** Across all ages, incomes, abilities, races and levels of transit use, over 80% of respondents agreed we should "look for ways to change the system [...] even if some [prefer it] the way it is."
- **Most respondents believe they would prefer a ridership-oriented network.** 65% of respondents prefer designing most or all service for ridership, including over 50% across all ages, abilities, incomes, races and levels of transit use.
- **But when considering specific objectives, respondents favored coverage-related priorities.** Across all ages, abilities, incomes, races, and levels of transit use, around 60% of respondents included "expanded mobility for low-income people in isolated neighborhoods" and "basic access to everyone who needs it, wherever they are" among their top three priorities.

Responses to Key Questions

Phase 1 survey - Spring 2021

(N = 2,872 respondents)

Coverage vs. Ridership	Respondents						
	All	Frequent Transit* Riders	Lower-Income**	People of Color***	Seniors (65+)	18 - 35 Years	Persons with Disabilities
Design all service for ridership	8%	6%	9%	8%	10%	6%	9%
Design most service for ridership, but offer some coverage	57%	58%	48%	49%	57%	59%	44%
Design half our service for each goal	21%	21%	23%	22%	18%	22%	22%
Design most service for coverage, but offer some ridership	11%	11%	14%	14%	10%	11%	15%
Design all service for coverage	3%	3%	5%	6%	4%	2%	10%

* Often" and "everyday" riders (pre-pandemic)

** Household income less than \$35,000 per year

*** Black, Indigenous, and other People of Color

Figure 6: Table showing the percentage of Phase 1 survey respondents that favored focusing on ridership vs. those who favored focusing more on coverage, in the absence of alternatives to evaluate.

What objectives should transit adhere to? (top three)	Respondents						
	All	Frequent Transit* Riders	Lower-Income**	People of Color***	Seniors (65+)	18 - 35 Years	Persons with Disabilities
Reduce pollution and greenhouse gas emissions	45%	45%	48%	38%	40%	50%	35%
Support denser and more walkable development	37%	35%	36%	32%	30%	43%	29%
A better economy without more traffic congestion	26%	24%	16%	22%	27%	22%	20%
Maximize access to jobs and opportunities	57%	57%	49%	58%	56%	51%	55%
Expanded mobility for low-income people in isolated neighborhoods	64%	63%	67%	58%	64%	63%	65%
Basic access to everyone who needs it, wherever they are	60%	61%	64%	61%	61%	60%	64%
Services to new development at the edges of the region	12%	12%	14%	20%	11%	11%	24%

* Often" and "everyday" riders (pre-pandemic)

** Household income less than \$35,000 per year

*** Black, Indigenous, and other People of Color

Figure 7: Desired objectives of the redesigned transit network. The percentage shown indicates the share of survey respondents that ranked the listed objective among the top three, from the seven options available.

Phase 2: Alternatives

In response to mixed comments in Phase 1, the project team developed two contrasting alternatives for the bus network.

The **Coverage Alternative** focused on continuing service to as many areas as possible, mostly with routes operating every 30 to 60 minutes, and maintaining the Transfer Point system.

These choices would **maximize the share of Madison residents within 1/4-mile walk of all day service (81%)**, but they also limit improvements to the system's usefulness. The Coverage Alternative would **increase the number of jobs accessible in 45 minutes or less by transit by +38%** for the median Madison resident, from 24,000 to 33,000.

In contrast, the **Ridership Alternative** focused service on just seven all-day routes, four of which would run every 15 minutes on weekdays. Fewer transfers would be required, so Transfer Points would not be necessary.

These choices would **limit the share of Madison residents within 1/4-mile walk of all-day service (67%)**, but also make transit much more useful for most people. The Ridership Alternative would **increase the number of jobs accessible by transit in 45 minutes or less by transit by +112%** for the median Madison resident, from 24,000 to 51,000.

Responses to Key Questions - Phase 2 survey - August/September 2021

(N = 3,088 respondents)

The Ridership Alternative is better for me and my family.	Respondents						
	All	Frequent Transit Riders*	Lower-Income**	BIPOC***	Seniors (65+)	18 - 35 Years	Persons with disabilities
Strongly agree	31%	33%	37%	34%	27%	38%	23%
Somewhat Agree	30%	27%	31%	28%	28%	31%	29%
Neither agree nor disagree	14%	13%	14%	14%	16%	12%	14%
Somewhat Disagree	14%	14%	10%	13%	16%	12%	17%
Strongly disagree	11%	13%	8%	11%	14%	8%	17%

The Coverage Alternative is better for me and my family.	Respondents						
	All	Frequent Transit Riders*	Lower-Income**	BIPOC***	Seniors (65+)	18 - 35 Years	Persons with disabilities
Strongly agree	15%	17%	20%	24%	19%	17%	22%
Somewhat Agree	22%	22%	19%	24%	20%	20%	21%
Neither agree nor disagree	25%	25%	26%	22%	25%	25%	21%
Somewhat Disagree	24%	23%	24%	18%	23%	26%	21%
Strongly disagree	13%	14%	12%	12%	13%	13%	15%

* At least four days per week (pre-pandemic)

** Household income less than \$35,000 per year

*** Black, Indigenous, and other People of Color

Figure 8: Tables showing the percentage of Phase 2 respondents indicating that either the Ridership Alternative (top) or the Coverage Alternative (bottom) would be an improvement for them and their family, compared to the current network. **Median opinion in each group in bold numbers.**

Public Outreach

The release of the [Alternatives Report](#) was followed by a second phase of public outreach, with similar methods. Key findings included:

- **Most respondents agreed the Ridership Alternative would be an improvement.** Across all ages, incomes, abilities, races and levels of transit use, 50 to 70% somewhat or strongly agreed the Ridership Alternative would be better for them and their family vs. 20 to 35% who disagreed.
- **Responses on the Coverage Alternative were split.** 37% of respondents agreed the Coverage Alternative would be better for them and their family, and 37% disagreed.
- **When comparing the two alternatives, the community leaned toward Ridership.** 48% of respondents favored or leaned clearly toward the Ridership alternative, compared to 24% favoring or leaning clearly toward Coverage. This preference held across all groups, except for people with disabilities, who were equally likely to lean toward Ridership or Coverage.

Choose [...] which alternative you prefer, or if you would prefer an option somewhere in between.

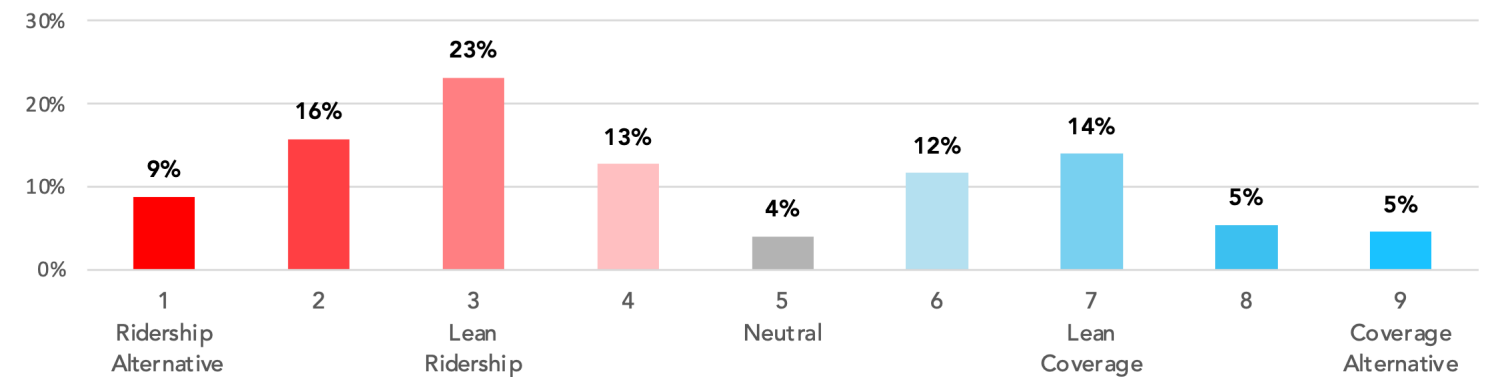
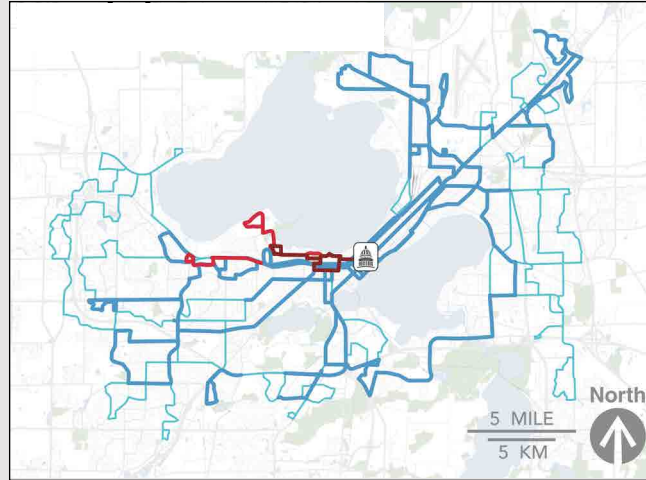


Figure 9: Desired objectives of the redesigned transit network. The percentage shown indicates the share of survey respondents that ranked the listed objective among the top three, from the seven options available.

Quick Comparison: Existing Network vs. Alternatives Considered vs. Draft Plan

Existing Service



- Most routes run every 30 to 60 mins on weekdays.
- Outlying areas are served by routes to Transfer Points, where people must switch buses.
- Many outlying areas are served by one-way hourly loops that make service confusing and difficult to use.
- 79% of Madison residents live within a 1/4-mile walk of a bus stop with all-day service.
- The median Madison resident can access 24,000 jobs in 45 minutes or less by transit on a weekday, including time spent walking and waiting.

Coverage Alternative

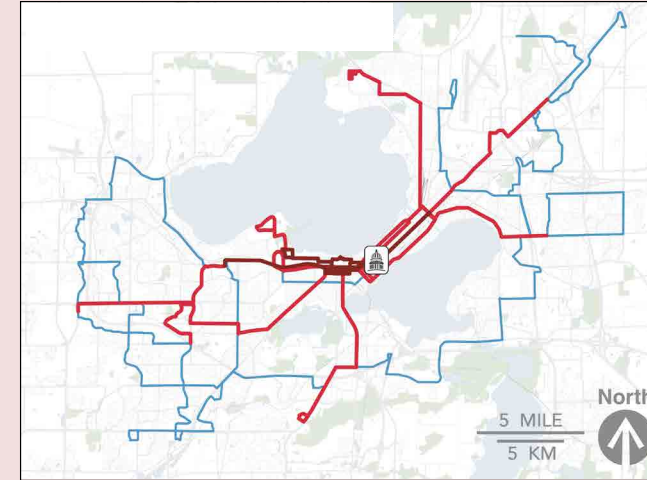
(NOT THE PLAN; released for input in Aug/Sep 2021)



- Most routes would run every 30 to 60 mins on weekdays.
- Pre-BRT East-West and North-South would run every 15 minutes, five days a week.
- Outlying areas would still mostly served by routes to Transfer Point. Several areas still served by one-way loops.
- 81% of Madison residents would live within a 1/4-mile walk of a bus stop.
- The median Madison resident could access 33,000 jobs (+28%) in 45 minutes or less by transit on a weekday, including time spent walking and waiting.

Ridership Alternative

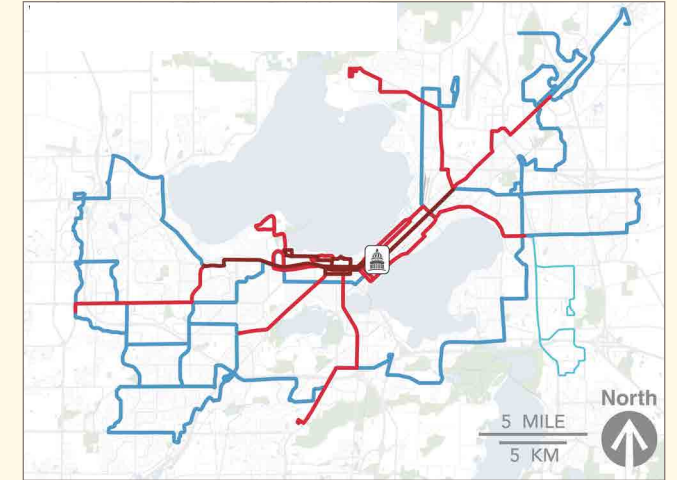
(NOT THE PLAN; released for input in Aug/Sep 2021)



- Most routes would run every 15 to 30 minutes on weekdays.
- Pre-BRT East-West and North-South routes would run every 15 minutes, six days a week.
- Routes would be long, continuous, two-way and connect directly to major destinations. Fewer transfers required.
- 67% of Madison residents would live within a 1/4-mile walk of a bus stop.
- The median Madison resident could access 51,000 jobs (+112%) in 45 minutes or less by transit on a weekday, including time spent walking and waiting.

Proposed Draft Network

(Current Proposal; released Jan 2022)



- Most routes would run every 15 to 30 minutes on weekdays. Some routes less frequent.
- Pre-BRT East-West and North-South routes would run every 15 minutes, seven days a week.
- Routes would be long, continuous, two-way and connect directly to major destinations. Fewer transfers required.
- 73% of Madison residents would be within a 1/4-mile walk of a bus stop with all-day service.
- The median Madison resident could access 44,000 jobs (+80%) in 45 minutes or less by transit on a weekday, including time spent walking and waiting.

Based on public input, Madison's Transportation Planning and Policy Board (TPPB) directed the project team to develop a Draft Plan that retains most of the benefits of the Ridership Alternative, while extending all-day coverage to a few more areas.

3 What's in the Draft Plan?

Design Principles

The Madison Transportation Policy and Planning Board (TPPB) directed the project team to develop a Draft Network that retains most of the benefits of the Ridership Alternative (presented in the [Alternatives Report](#)) while extending coverage to a few more areas. Based on the TPPB's deliberations, the project team interpreted this to mean:

- **Maximize the number of places people can reach in a reasonable amount of time** by concentrating service in areas where we can expect moderate to high ridership.
- **Retain service in a few more neighborhoods than shown in the Ridership Alternative**, even if those areas cannot be expected to generate high ridership.
- In weighing decisions about which lower ridership areas should receive service, **prioritize peripheral areas with significant low-income populations.**

More frequent and direct routes

When the bus only comes once an hour, waiting is often the longest part of a trip by transit. Even if you time your departure and don't wait at the bus stop, you are likely to arrive either very early or late to your destination, meaning you end up waiting somewhere, or making someone else wait.

Recognizing this, the Draft Network Plan would reorganize service onto fewer but more frequent routes, typically every 15 to 30 minutes. These routes would be longer and more direct, reducing out-of-direction travel and the need for transfers.

As a result, the average walk to a bus stop would increase by about 300 feet in Madison. For most people, the added time spent walking would be much less than the time saved by waiting up to 15 or 30 fewer minutes for the next bus.

Consistent service across the day and week

With the Existing Network, anyone who really wants to know how to get from point A to point B can find out the best way to do so with paper schedules, or an online trip planner. But for many transit trips, the best path from A to B changes over the course of the day and week.

Some users of the Existing Network may be experts at complex routes and schedules. But this complexity dissuades some people from using transit and is onerous even for those who do.

The Draft Network Plan would reduce this complexity by running the same all-day routes seven days a week, and no different weekend-only routes. Daytime service levels would continue until 8 PM, and most routes would run every 30 minutes or better on evenings and weekends.

Serve the same areas, but not always the same street

Because the Draft Network includes fewer routes, some streets that currently have service would no longer be on a bus route. In most cases, bus service would remain available on a nearby alternative street, usually at higher frequency. But in a few areas, all-day service would be replaced by service at peak hours only.

Take advantage of BRT infrastructure

The City intends to begin operating the first line of Metro Rapid BRT by 2024. The redesigned network would be operational in 2023, but would include "pre-BRT" routes following the initial East-West alignment (Route A), as well as the anticipated North-South (Route B) and Middleton (Route F) alignments.

Proposed Draft Network Map

The Proposed Draft Network is designed to be very different from the Existing Network (see map on page 5).

- **HIGHER FREQUENCY:** Four routes (A, B, C and D) would run **every 15 minutes or better**. All eight main routes (A through H) would run every 30 minutes or better, on weekdays from 6 AM to 8 PM¹. Most routes would run every 30 minutes or better from 5 PM to midnight, seven days a week.
- **DIRECT TRAVEL:** Service would be concentrated onto **fewer, straighter routes that provide direct service between many people, jobs and opportunities**.
- **FEWER TRANSFERS:** Passengers in outlying areas would no longer be required to go through a Transfer Point for nearly every trip. Instead, routes would be designed to connect on-street as they travel from one end of Madison to the other.

The consequence of these choices is also that there would be:

- **LESS COVERAGE:** Some areas would be a **longer walk from service**. For some people, transit may become too far to walk to. For most people the impact would be limited: Over 80% of Madison residents would live within a similar distance to a bus stop as they do today². See page 19 for details on areas that would be farther from all-day service, or where buses would run on different streets.

¹ Service on the UW campus would also remain frequent. Details of on-campus service may change as reopening proceeds.

² By "similar distance", we mean that the walk distance to the nearest bus stop would change by less than 1/8-mile (650 feet). This includes people who would live closer to a bus stop than they do today.

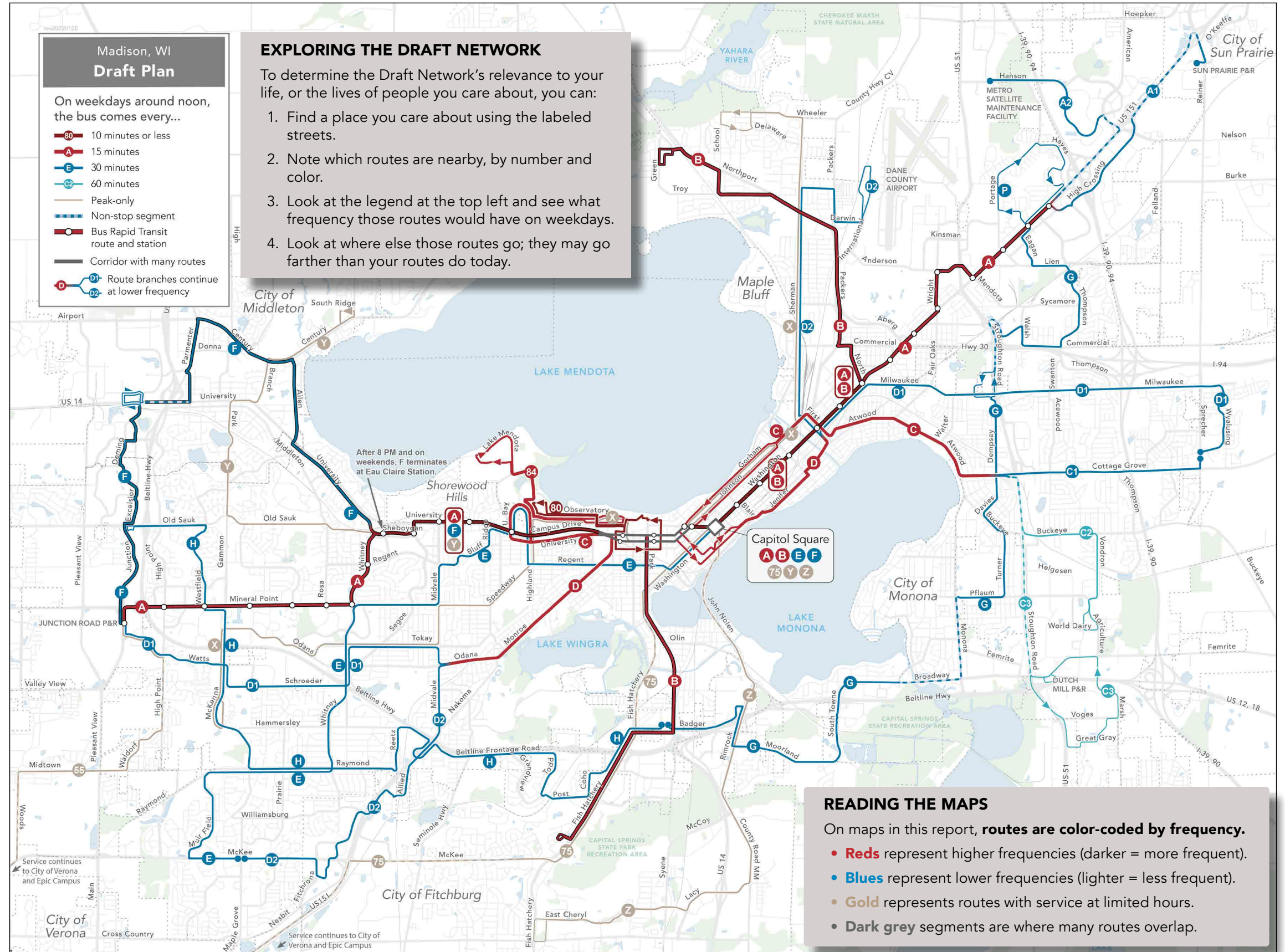


Figure 10: Map of the Proposed Draft Network.

High frequency in many more locations.

In the Existing Network, nearly all of Madison is served by routes that run every 30 to 60 minutes on weekdays. In the Draft Network, nearly every route¹ would run at least every 30 minutes, and four routes would run every 15 minutes, resulting in higher frequencies across the whole system.

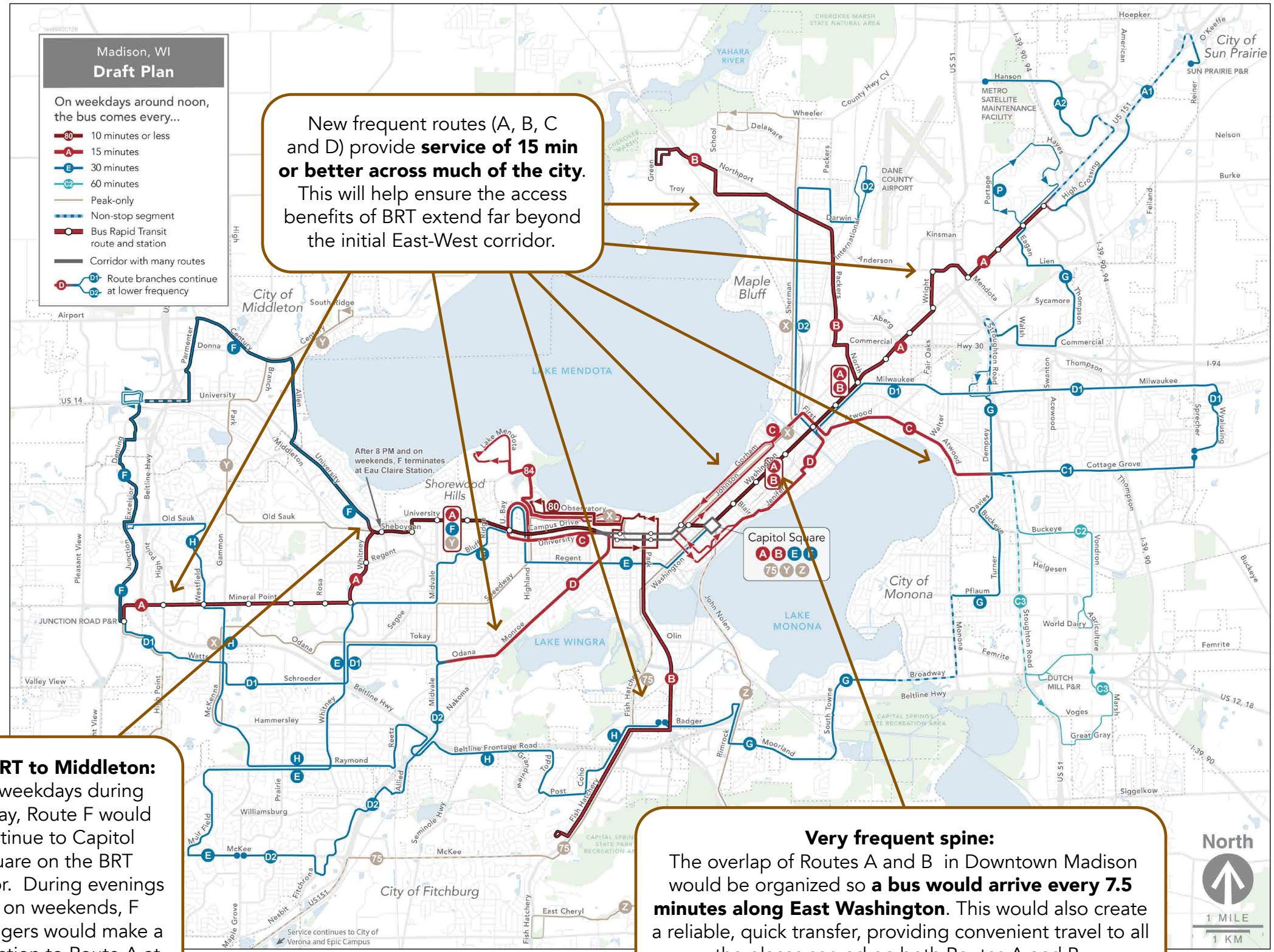
The new pre-BRT routes act as the central frame of this frequent network. Route A crosses from the far west to the northeast corner of the service area, while Route B runs down the center from the north to the south. These two routes will create faster trips in two ways.

- Much shorter wait times:** With frequencies of 15 minutes or less, riders will not have to wait long when catching or transferring to a bus on these routes.
- Fewer stops:** Stops on BRT routes are spaced farther apart than regular bus routes (as seen on Route A in the map). This means buses will spend less time having to slow down and stop to let passengers on and off on every block.

Once BRT infrastructure becomes fully functional, the speed and reliability of these routes would also be supported by bus lanes and transit priority measures at signalized intersections. This infrastructure would also benefit parts of Route F, as the future Middleton BRT.

Route A matches current plans for the East-West BRT corridor. But these plans do not yet address full details of the North-South BRT. This plan proposes that Route B would operate on Park St in the South Side, and Fish Hatchery Rd south of Badger. On the North Side, Route B would operate on Northport Dr, Packers Ave and North St, enabling connections to East Side destinations at the intersection East Washington Ave, North Street and Milwaukee Street.

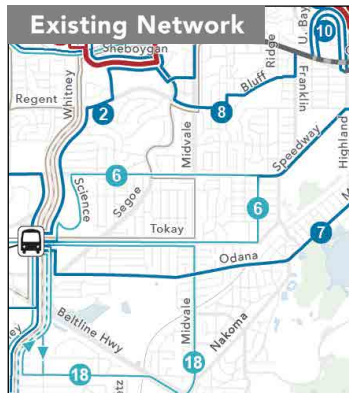
¹ Every all-day route, except for the C2 and C3 branches of the C route. Peak-only routes would operate every 30 minutes at rush hours.



Faster and more direct travel across Madison.

Consolidating routes:

Where multiple existing routes overlap on the same street or nearby streets, there would be a single, more frequent route. Here, the D and E routes consolidate service provided by existing routes 6, 7, 11, and 18. They would also run at higher frequencies. Below is an excerpt from the Existing Network Map



Madison, WI Draft Plan

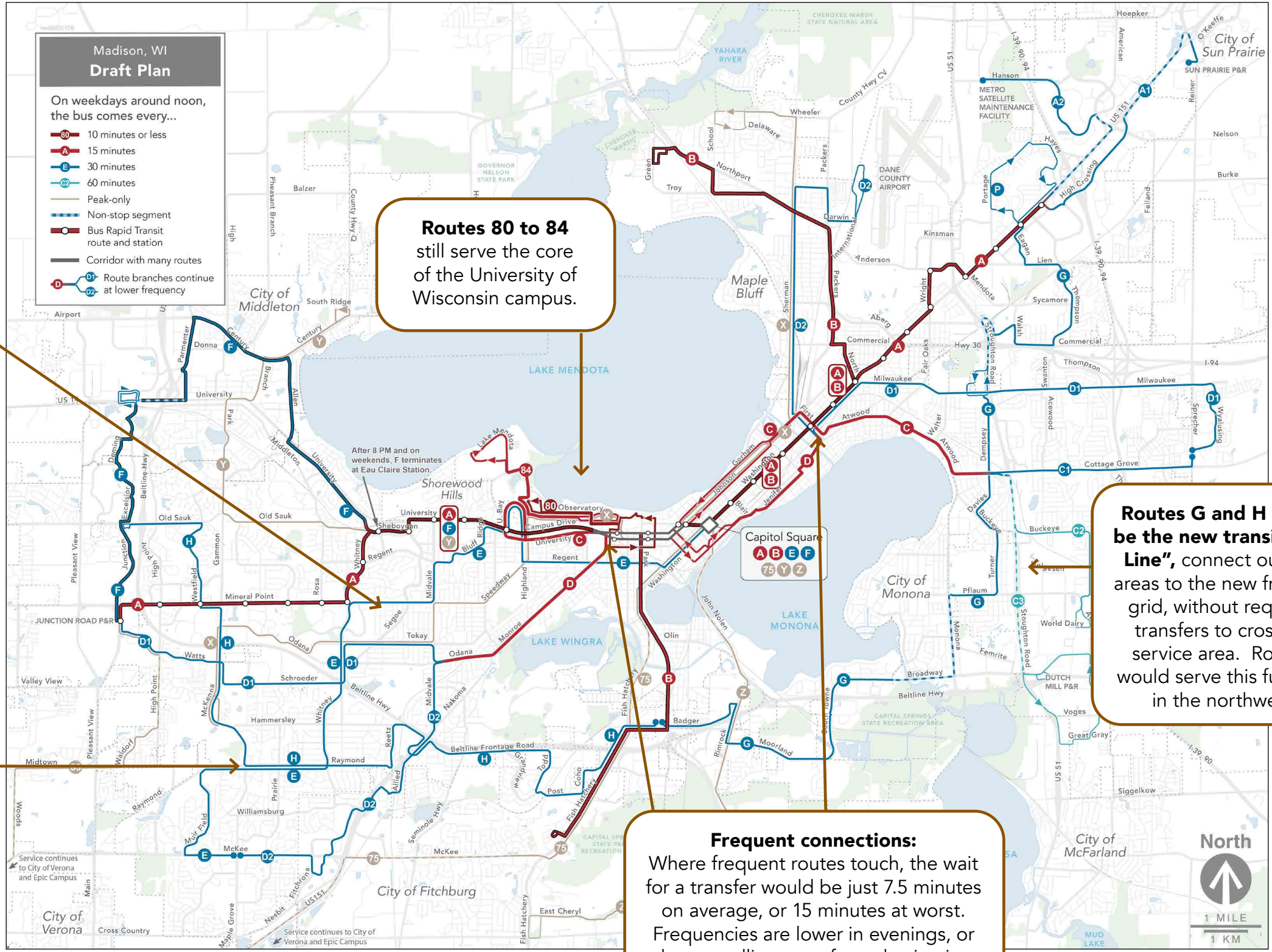
On weekdays around noon, the bus comes every...

- 10 minutes or less
- A 15 minutes
- E 30 minutes
- E2 60 minutes
- Peak-only
- Non-stop segment
- Bus Rapid Transit route and station
- Corridor with many routes
- D E Route branches continue at lower frequency

Routes 80 to 84 still serve the core of the University of Wisconsin campus.

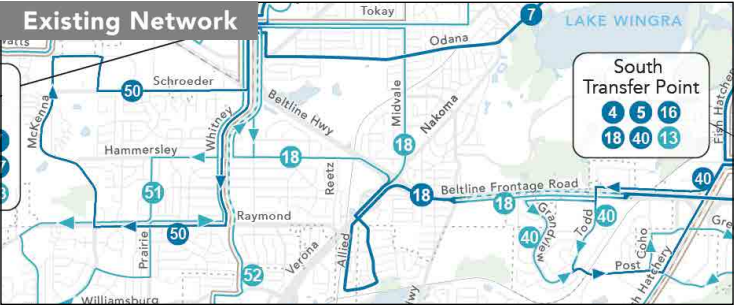
Routes G and H would be the new transit "Belt Line", connect outlying areas to the new frequent grid, without requiring transfers to cross the service area. Route F would serve this function in the northwest.

Frequent connections: Where frequent routes touch, the wait for a transfer would be just 7.5 minutes on average, or 15 minutes at worst. Frequencies are lower in evenings, or when travelling to or from destinations along route branches



More direct routes:

Routes have been simplified to create more continuous and direct travel going north-south and east-west, rather than deviating for transit hubs and other outlying destinations. For example, someone would be able to ride the H bus straight across Raymond to the Verona Road and Fish Hatchery Road areas, without riding up to the West Transfer Point and back out.



Service to low-income people and the places they need to go.

In developing the Draft Network, the needs of low-income people were explicitly taken into account. This was accomplished by ensuring service would remain available:

- In neighborhoods where many low-income people live.
- To destinations that many low-income people need to go.

The outcome of this is illustrated below. The map in Figure 11 (lower left) compares the location of proposed routes to the local densities of low-income people.

All areas with concentrations of people living below the federal poverty level would live near service, and in most cases that service would be equally or more frequent than it is today.

About 87% of people in poverty would be within 1/4-mile of a bus stop, including 65% near service every 15 minutes or better.

This would result in a significant improvement in the job opportunities available by transit to most low-income people, as shown on page 42.

However, residences and job sites are not the only places people travel between. The map in Figure 12 (lower right) compares the locations of proposed routes to the location of low-cost and mid-cost grocery stores.

Grocery stores attract very regular travel, and they are often in central locations where many other services are located. People with limited means tend to have more limited choices within their budget, so access to low- and mid-cost stores is important.

As shown on the map, most of the low- and mid-cost grocery stores in Madison are located in places that would be served by two or more routes in the Proposed Draft Network. Many are within walking distance of service every 15 minutes or better.

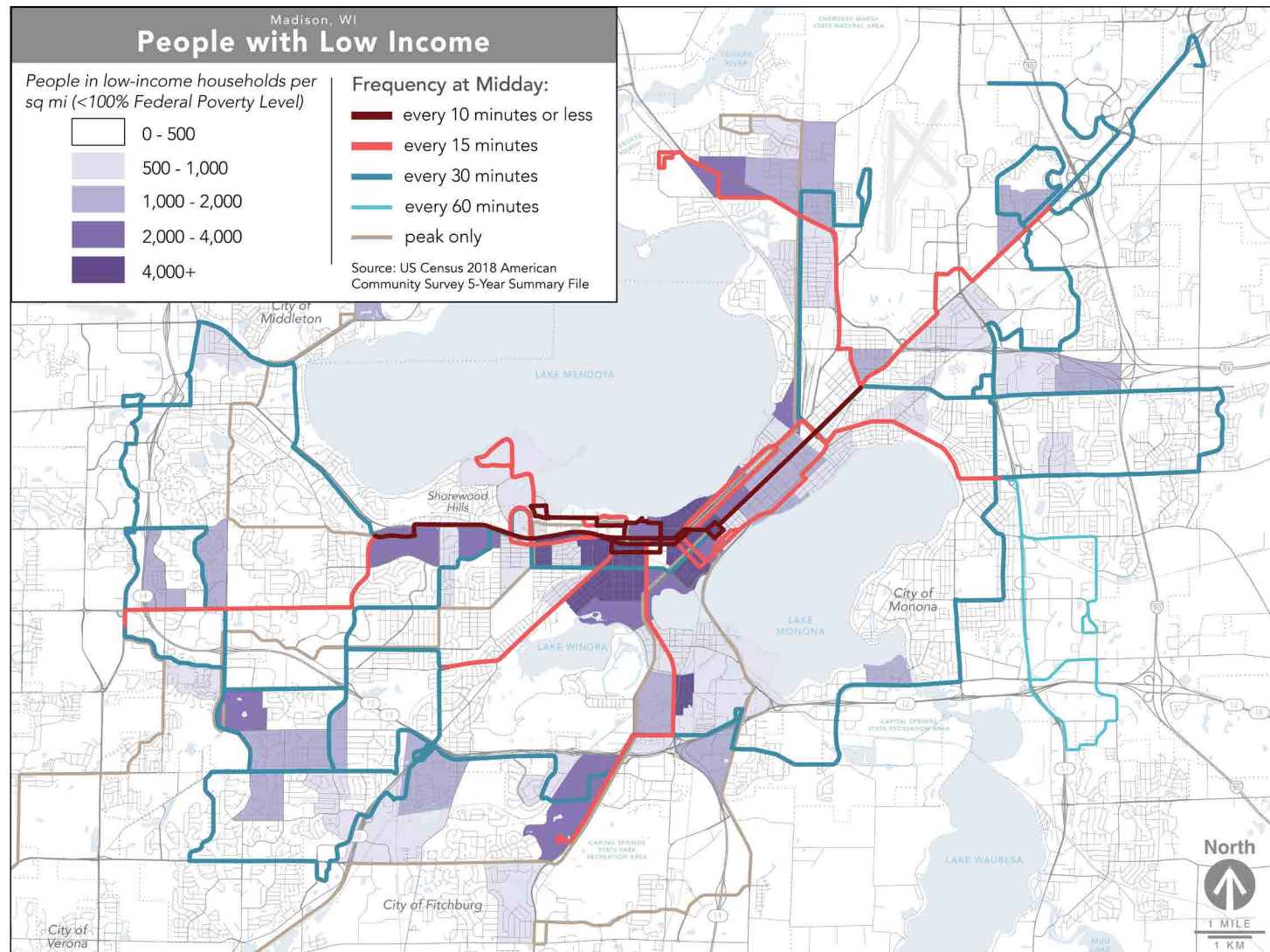


Figure 11: Map comparing the density of low-income residents with proposed midday service levels.

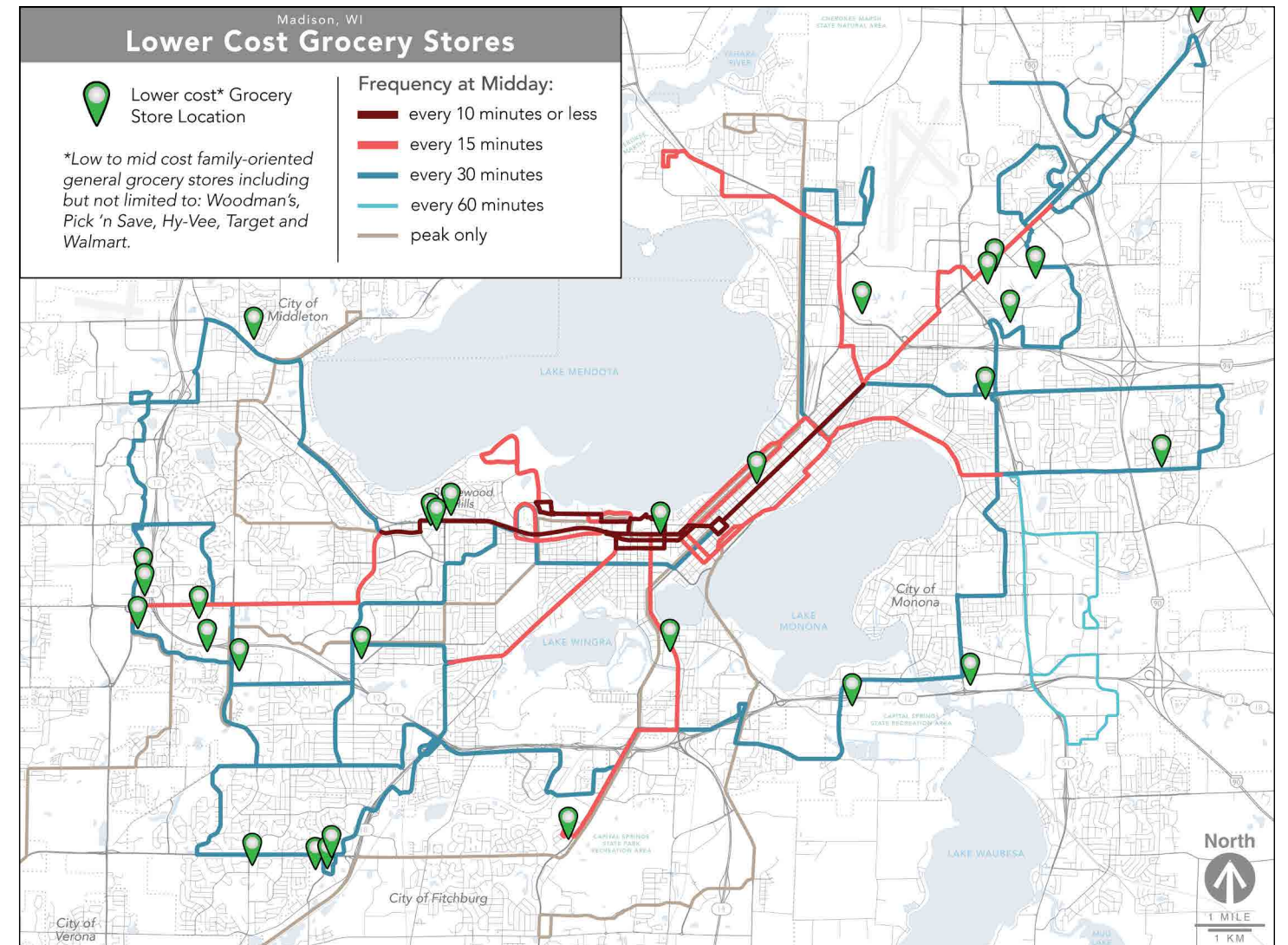


Figure 12: Map comparing the locations of low-cost grocery stores with proposed midday service levels.

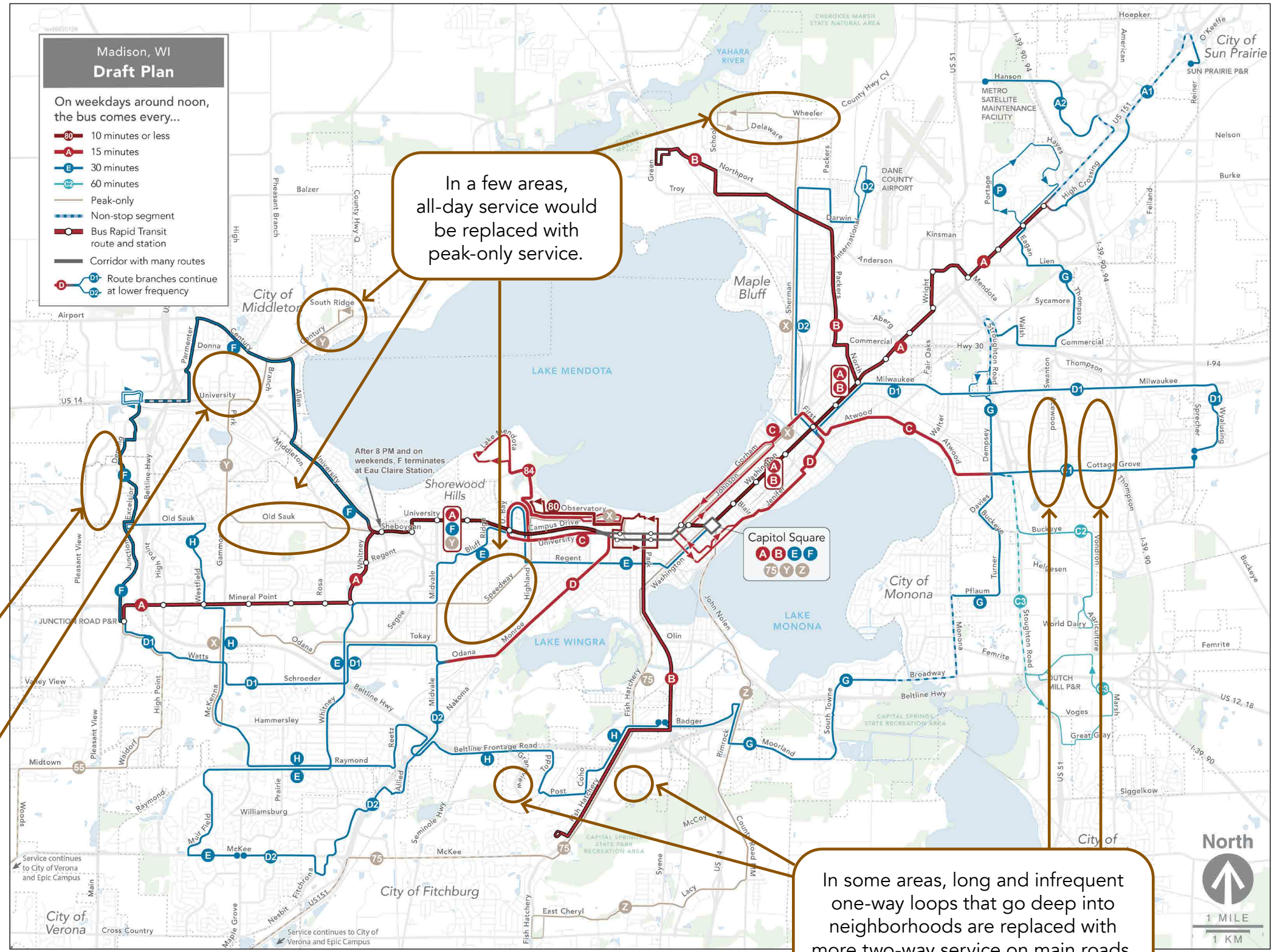
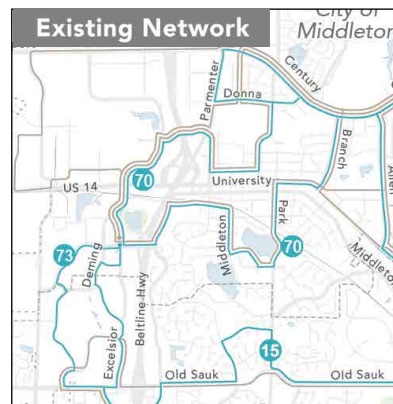
Longer walks, and some areas left with peak-only service.

The downside of concentrating service into fewer, higher frequency routes is that transit covers a smaller area. Places very close to a low-frequency route in the Existing Network might be a farther walk to a more frequent route in the Draft Network.

In most cases, the shorter wait for a more frequent bus would mean the overall trip would be faster. However, some people might not want or be able to make the longer walk. Analysis suggests that, if the Proposed Draft Network were implemented:

- 5% of Madison residents would live at least 1/8-mile closer to a bus stop than they do today.
- 78% of Madison residents would be about the same distance from a bus stop as they are today. They would use the same bus stop they do today, or a different stop within an 1/8-mile or less.
- 17% of Madison residents would live at least 1/8-mile farther from a bus stop than they do today.

Longer walks to transit:
Some places close to a low-frequency route today would be **a longer walk to a more frequent route** with the Proposed Draft Network. For example, these pockets served by the existing 60 minute and peak-only routes shown below would have to walk a little farther for 30 minute frequency on the F bus.



Proposed Service on Weekdays vs. Evenings and Weekends

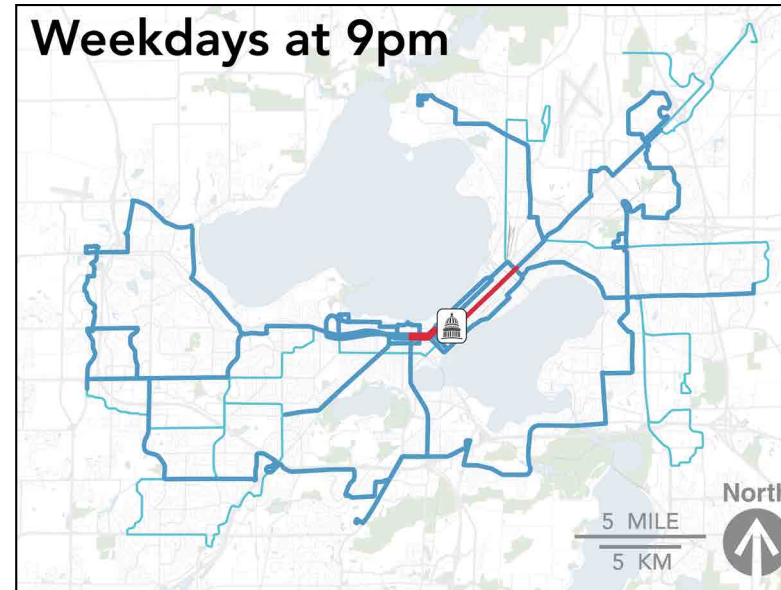
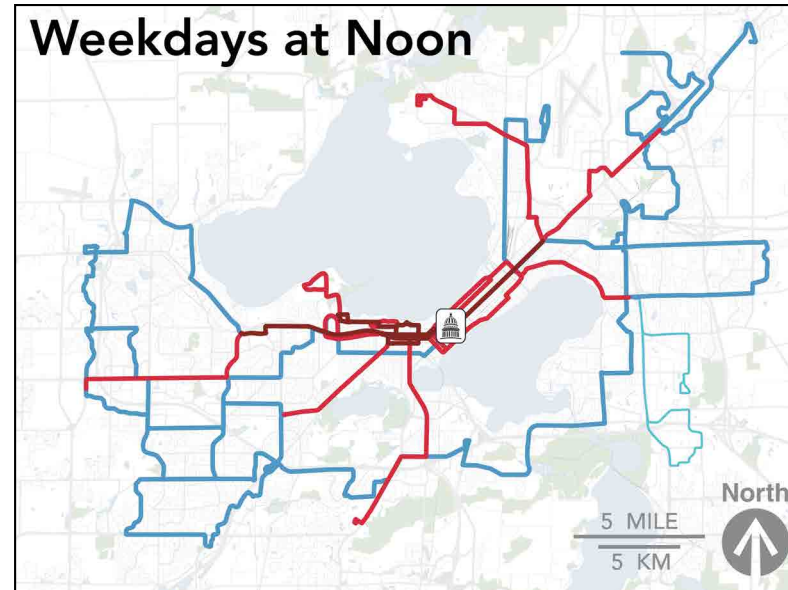
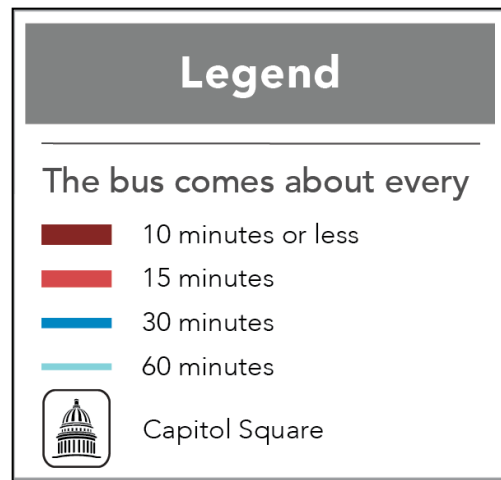


Figure 13: These maps show how frequencies would vary between weekdays, weekday evenings, and weekends.

The maps on this page show how much service would be provided at different times of the day and week, if the Draft Plan were implemented.

- **About half of the network would run every 15 minutes or better on weekdays in the daytime.** The other half would offer service at least every 30 minutes.
 - The main exception to this are the branches of Route C operating in southeast Madison. Each of those branches (C2 and C3) would run every 60 minutes.
 - Several peak-only routes would run every 30 minutes during morning and evening rush hours only, for extra peak-hour passenger capacity and to provide service in lower-rider-ship areas.

- **Weekday evening service would mostly run every 30 minutes,** although some routes would drop to every 60 minutes after 8 PM.
 - Many routes in the existing network drop to 60 minute frequencies after 6 PM so 8 PM is an improvement
 - Route E and the branches of Route D (D1 and D2) connecting would run every 60 minutes after 8 PM. This would affect service between Downtown and parts of the east, north and southwest sides.
 - However, unlike in existing service, outlying areas along routes with 60-minute evening frequencies would continue to have direct service to and from central Madison with no transfers.

- **On Saturdays and Sundays, service would remain frequent (every 15 minutes) on the pre-BRT East-West and North-South lines (Routes A and B).**
 - Frequencies would drop to every 30 minutes in most of the rest of the network.
 - Route E and the branches of Route D (D1 and D2) would drop to every 60 minutes.
 - Weekend evening service would be similar to weekday evening service, but would end an hour earlier.
- Note that the Draft Plan does not propose any change to routes, frequencies or hours of service on routes centered inside the UW campus (80 series). These continue to be planned in coordination with UW.

Detailed Frequencies by Proposed Route

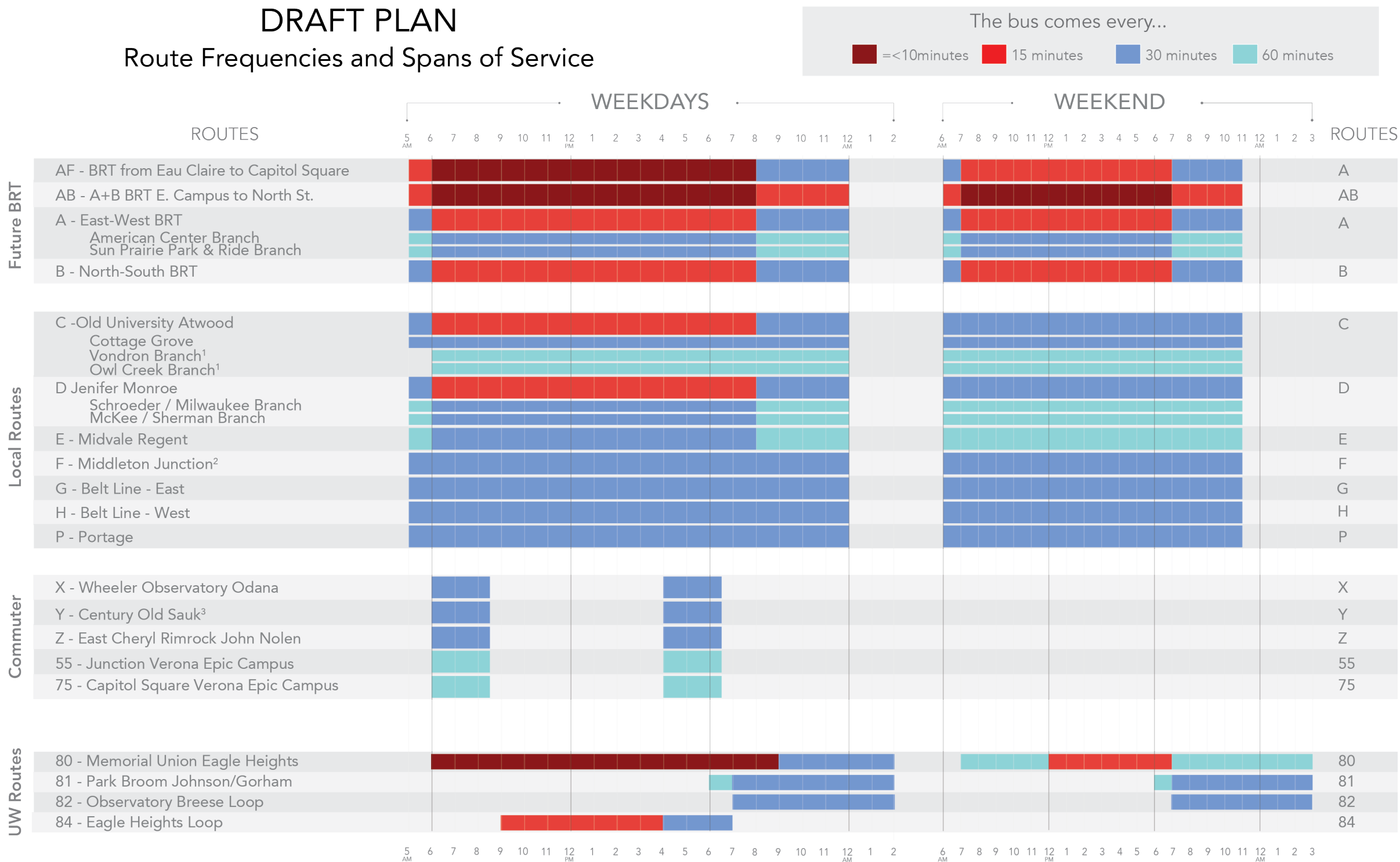


Figure 14: This chart shows how often the buses would run on weekdays and weekends in the Draft Network Plan. All routes would run seven days a week, from 5 AM until 12 AM on weekdays and from 6 AM to 11 PM on weekends. Higher frequencies would be maintained from 6 AM to 8 PM on weekdays on most routes. Routes A and B would maintain service every 15 minutes seven days a week.

Key Differences with Past Service

1. More midday and early evening service, less peak service. Prior to COVID-19, Metro Transit provided twice as much service at 8 AM as at noon. This plan would increase service in the midday and early evening, by limiting added service at rush hours.

2. Seven day a week frequent service on future BRT Routes. This plan would restore pre-COVID service amounts in areas to be served by Routes A, B and F, but make service more even across the day and week. About 36% of Metro Transit service was provided in the BRT corridors in 2019, compared to about 35% of service in this Draft Plan.

3. Fewer peak-only routes to Downtown. Metro Transit historically provided one-seat service to Downtown from nearly everywhere in Madison at rush hour, but far fewer areas at midday. This plan would provide all-day one-seat rides to Downtown from most areas, and more consistent all-day service to areas near Belt Line service (Routes G, H and P).

Notes:

1. Route C service from Vondron and from Owl Creek would be direct to downtown during weekdays from 6 AM to 8 PM. At all other times, this service would require a timed connection at Atwood and Dempsey.

2. Route F continues as a BRT route to Capitol Square on weekdays from 6 AM to 7 PM. At all other times, F connects with BRT A at Eau Claire Station.

3. Route Y continues as a BRT route to Capitol Square on weekdays during the AM and PM rush hours.

UW routes are listed here for information only. No changes to Routes 80, 81, 82 and 84 are proposed as a part of this plan.

Key Transfer Locations

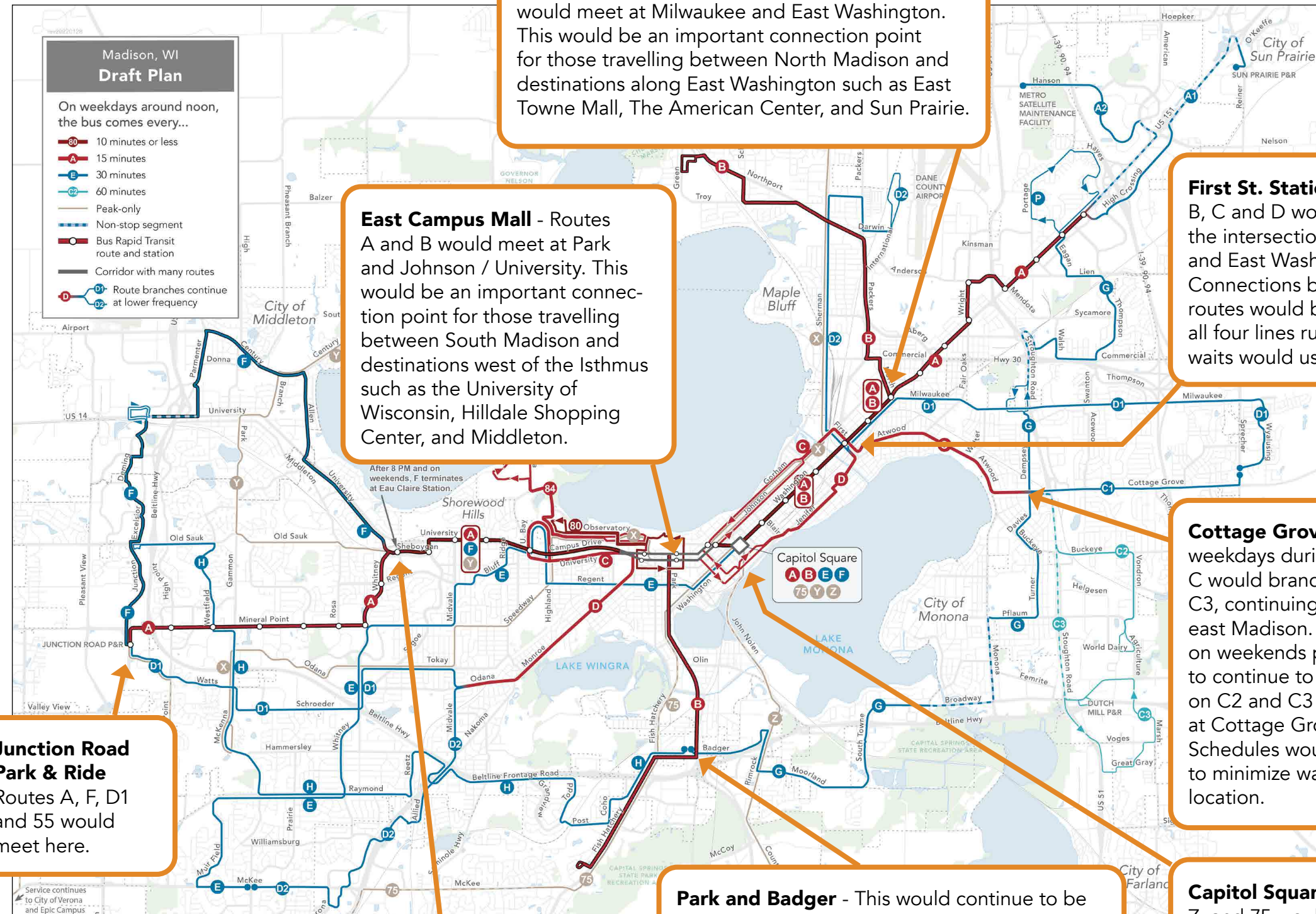
In the Existing Network, most routes begin or end at a designated transfer point for a timed connection. In the Proposed Draft Network, most routes would begin and end in outlying areas of Madison, and operate from those areas all the way to Downtown and across the city, allowing for travel to more destinations on a single route.

Nonetheless, transfers would still be necessary to connect between some origins and destinations. Many transfers would involve connecting between two routes operating every 15 minutes or better, minimizing waiting. Where transfers involve less frequent service, as many as possible would be timed.

The most important transfer locations in the Draft Network are shown in the map at right. Enhanced bus stop shelters at these five locations would make transfers more tolerable, particularly if they are heated in the winter.

In addition to the locations pointed out on the map, other places where transfers may occur frequently (and Metro Transit should consider enhanced shelters) include:

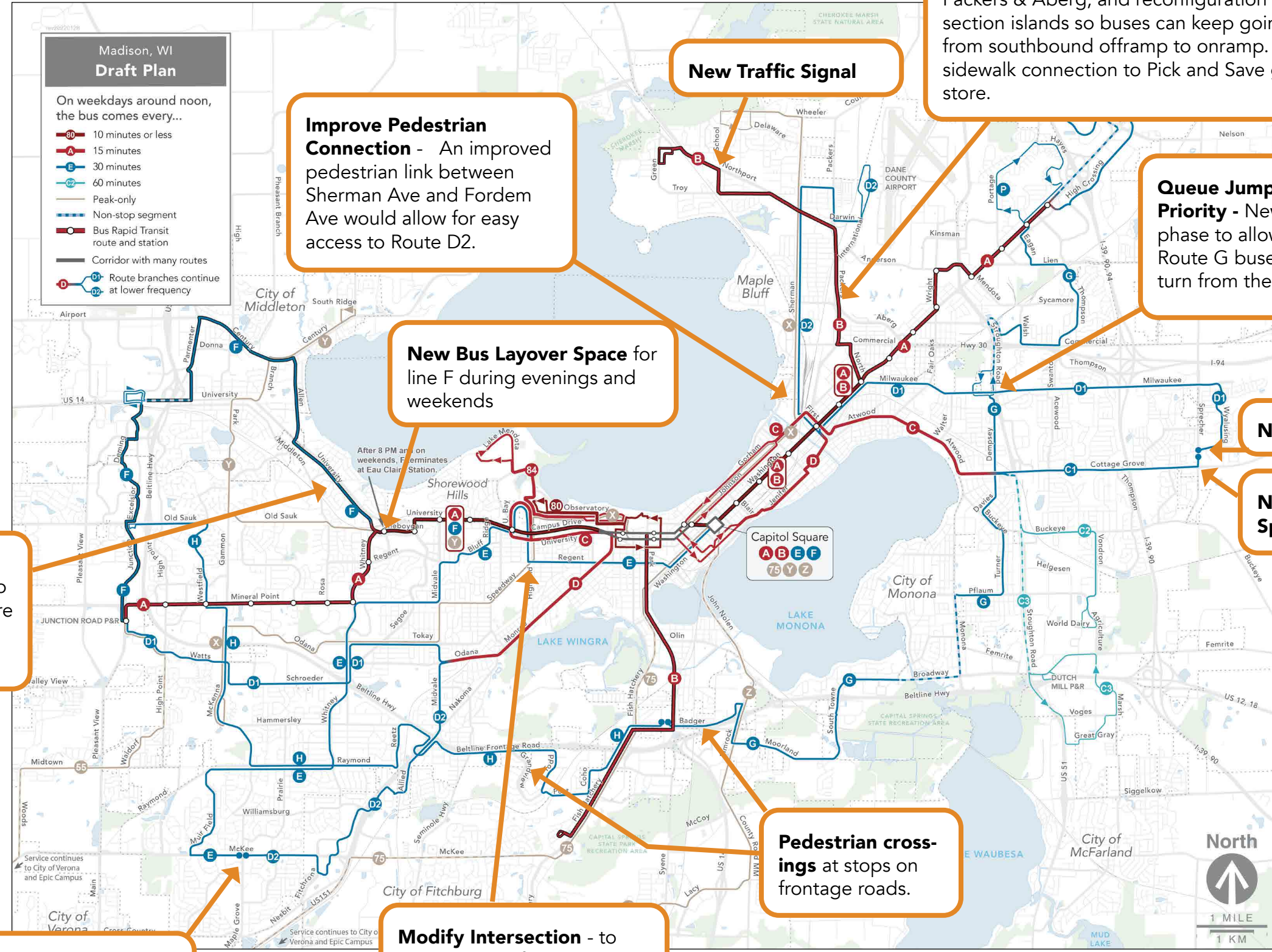
- Capitol Square, where proposed Routes A, B, E, F, Y, Z and 75 would meet.
- Junction Road Park & Ride, the west side terminus of Route A, Route F, and the D1 branch of Route D.
- Sun Prairie Park & Ride, the east side terminus of the A1 branch of Route A.



New Infrastructure Requirements

Routes in the Draft Network plan would mostly operate on streets with existing transit service, but increased bus frequencies and some new turn movements require infrastructure modifications. Nevertheless, the plan would require some changes to physical infrastructure, such as:

- New bus stops where service patterns would change, such as places where one-way service would be replaced with two-way service.
- Improvements to some pedestrian connections and crossings to allow for safer access to transit on main roads.
- Modified signals or geometry at some intersections, to allow for new bus turns.
- End-of-line layover space, bathrooms and other facilities for driver breaks.



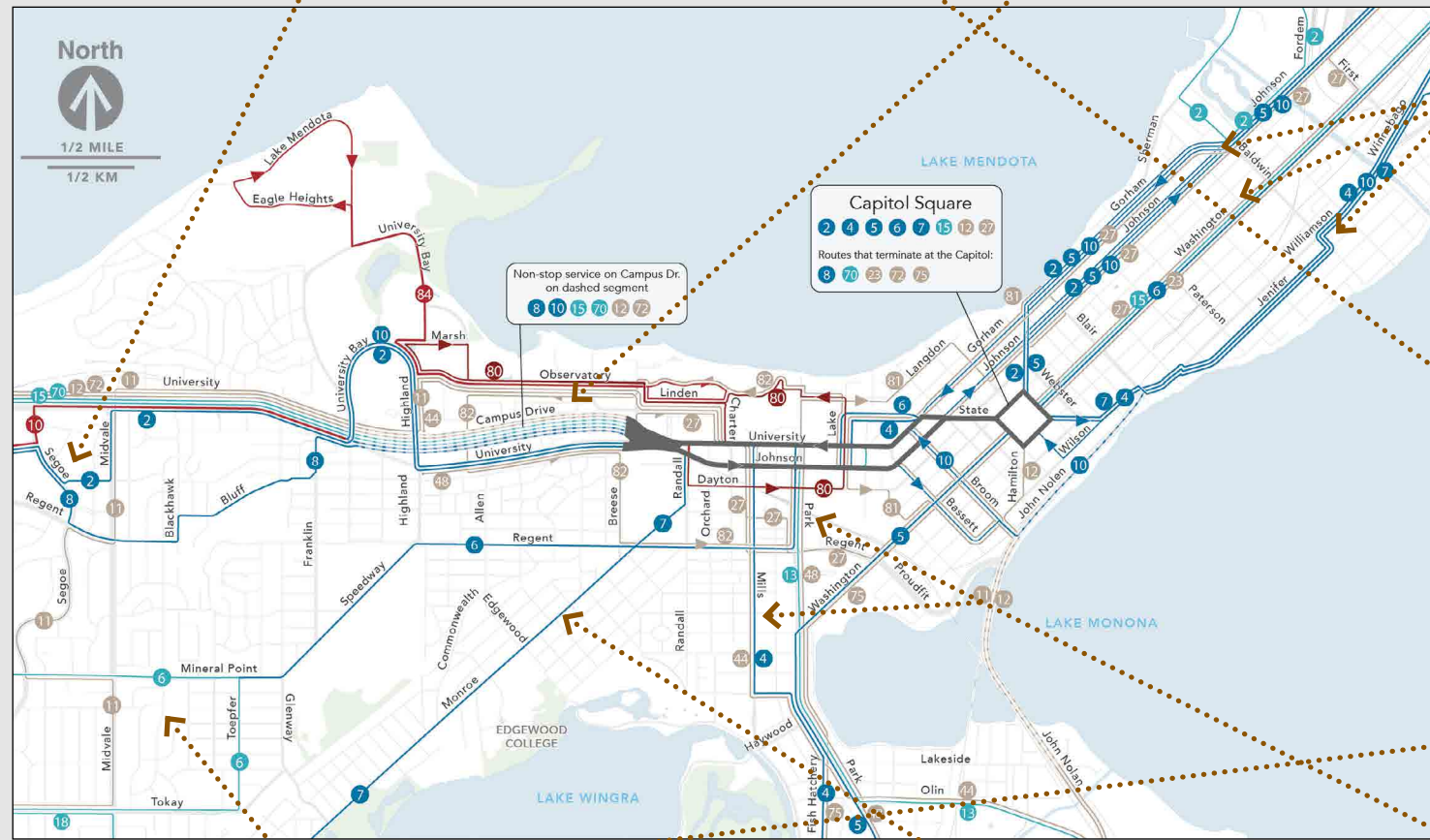
Local Network Changes - Central Madison

Buses would no longer run on Midvale north of Regent or on some of the smaller streets west of Midvale and north of Mineral Point. Riders might have to walk farther to reach **Route E** or the more frequent **Route A**.

Overlapping existing routes on **Campus Drive** would be combined into a very high frequency corridor served by **Routes A, F, and Y** during the midday, corresponding to the future East-West BRT alignment. Overlapping routes on University Ave would be replaced by the single **Route C** with service every 15 minutes.

The multiple overlapping routes on **Gorham and Johnson; Washington; and Williamson and Jennifer;** would combine into high frequency **Routes A, B, C, and D**, each with service every 15 minutes or better, allowing for more regular and often shorter wait time between buses in both directions.

Existing Network



Draft Network



Route 6 service west of Downtown would be replaced by **Routes D, E and X**. East of Midvale and near Midvale, this would result in service every 30 minutes instead of every 60 minutes on routes E and D1. West of Midvale, passengers would have peak-only service on Route X, or a longer walk to Route D or E at other times.

Route 7 would be upgraded to 15 minute frequencies in **Route D**.

Existing routes on **Mills and Park** would combine into **Route B**. Some riders would have to walk a couple blocks farther to a stop, but they would have higher frequency service. Existing **Route 5** riders would gain direct service to UW.

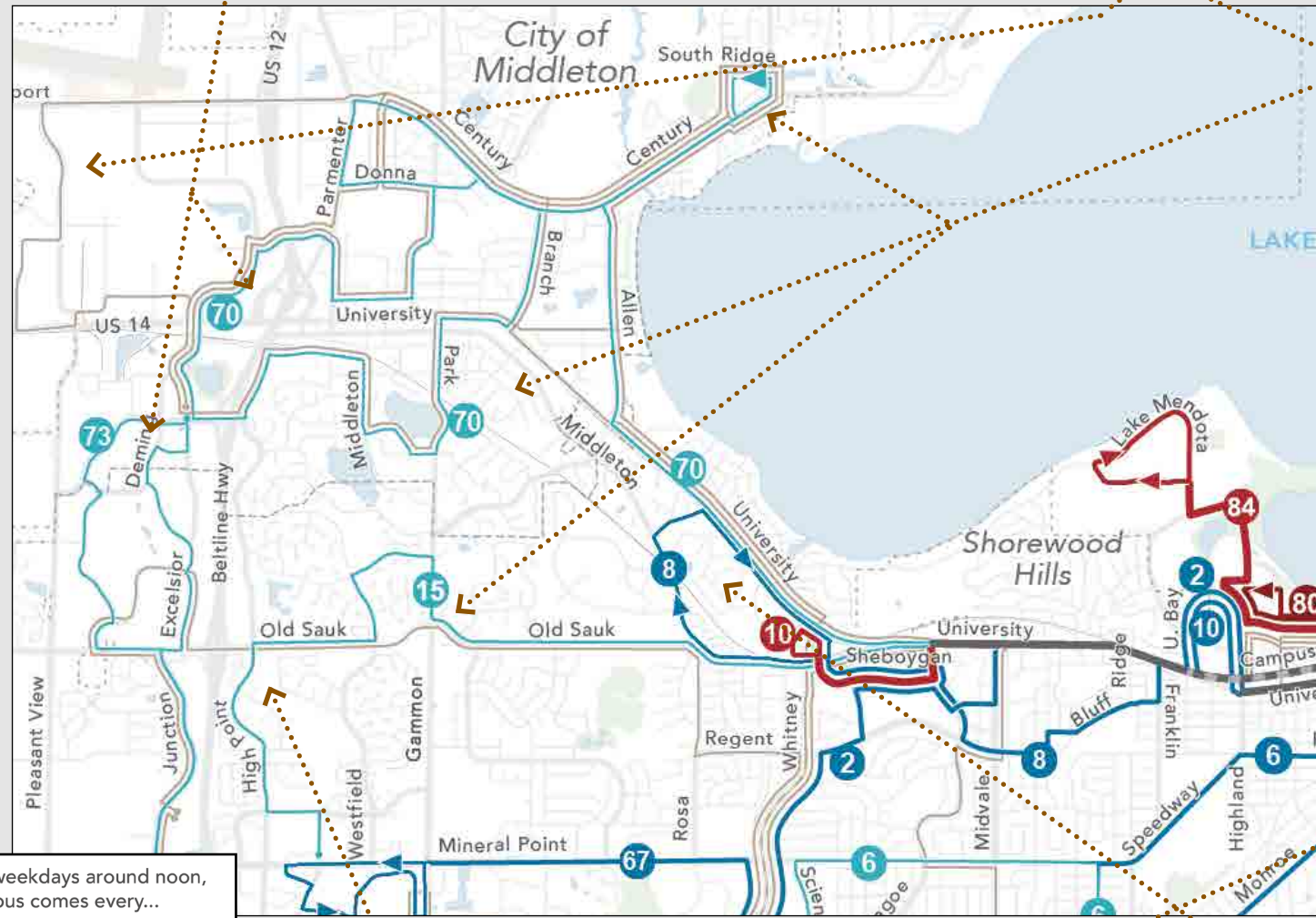
Local Network Changes - Northwest

Existing routes 70, 72, 73 and 78 in Middleton would combine into the new **Route F**, with service every 30 minutes seven days a week. Middleton Service would be drastically faster, simpler, and more direct, but some riders on the existing routes would have to walk farther to a bus stop.

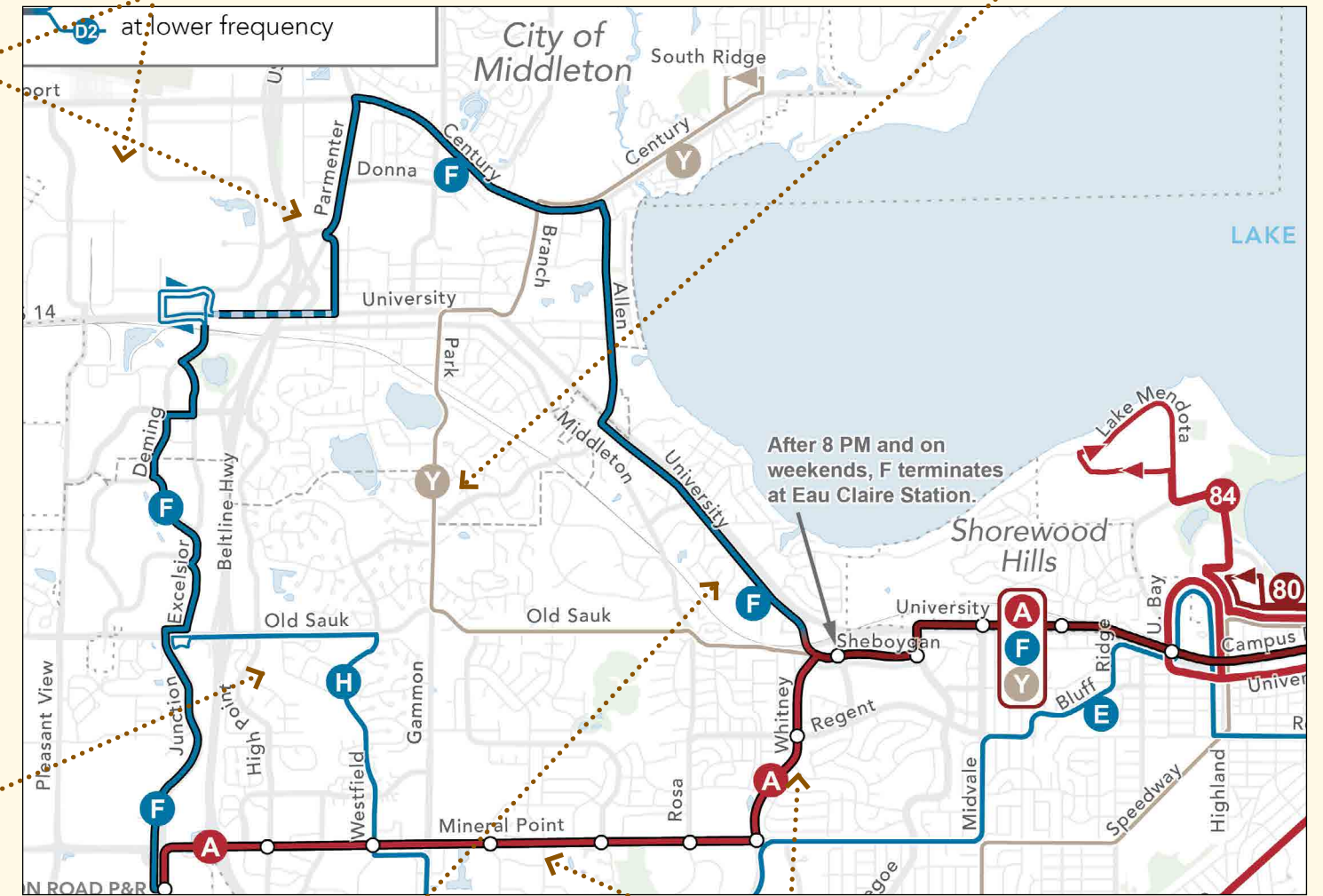
Peak-only service to Western and Northern Middleton business park areas would be eliminated and service re-invested into Route F.

Parts of all-day **Routes 15 and 70** would be replaced by peak-only **Route Y**.

Existing Network



Draft Network



On weekdays around noon, the bus comes every...

- 10 minutes or less
- 15 minutes
- 30 minutes
- 60 minutes
- Peak-only
- Non-stop segment
- Bus Rapid Transit route and station
- Corridor with many routes

Hourly **Route 15** service to Downtown on outer parts of Old Sauk and High Point would be replaced with service every 30 minutes on **Route H** on Old Sauk and Westfield. This service would connect to service to Downtown every 15 minutes on **Route A**, and service every 30 minutes to Middleton on **Route F**.

The one-way end loop on **Route 8** would be replaced with two-way service on **Route F** on University Ave. Riders on Old Sauk could use **Route Y** at peak hours, or walk further to service every 15 minutes on **Route A**.

Route A on the future East-West BRT corridor would become a primary and direct path into Downtown from areas near Mineral Point Road and Whitney Way, with service every 15 minutes, seven days a week.

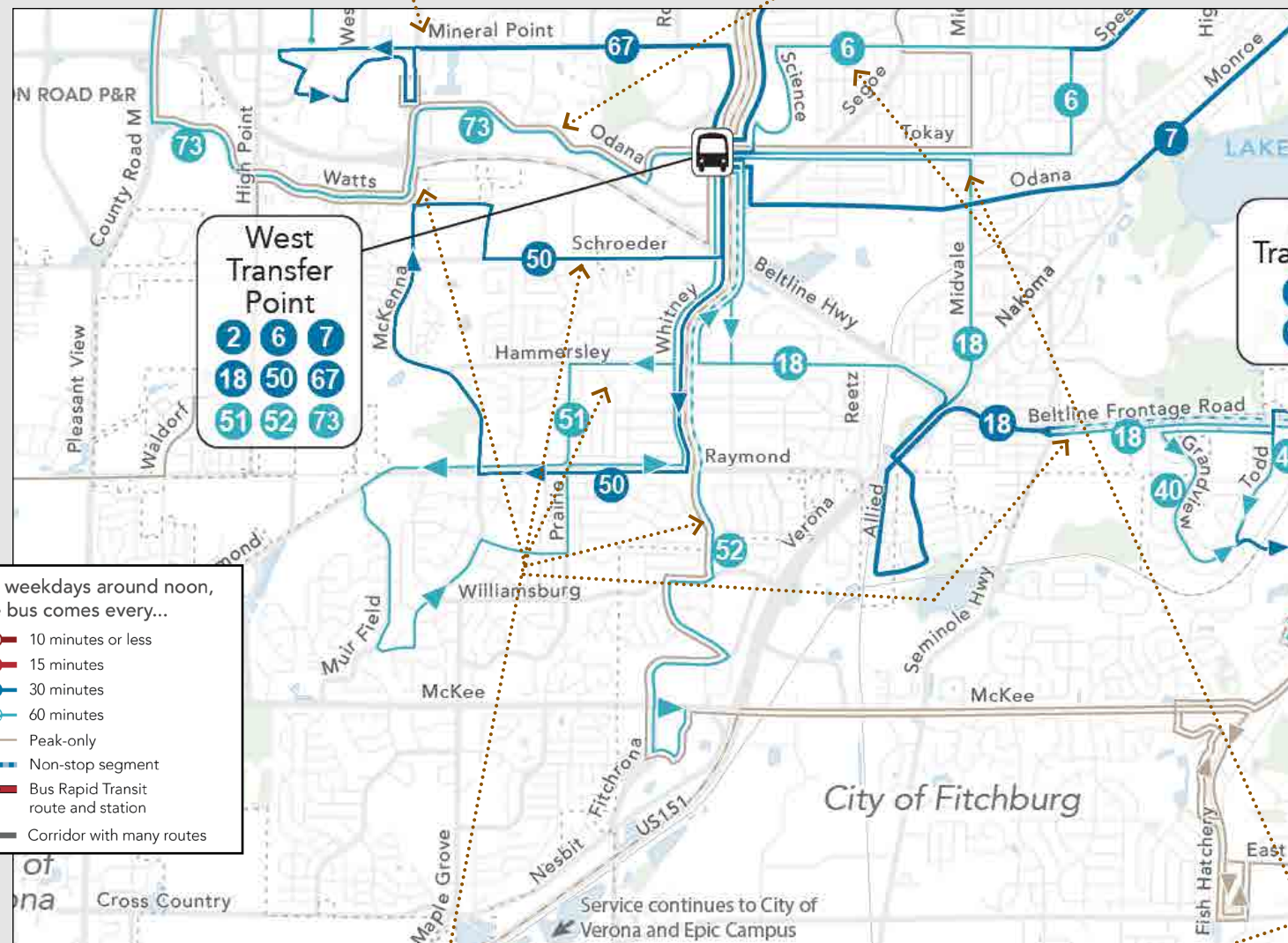
Local Network Changes - Southwest

Existing Routes 2 and 67 would combine into the new **Route A** following the future East-West BRT corridor. Service would extend west to Junction Road and provide direct service to Downtown Madison at a much higher frequency.

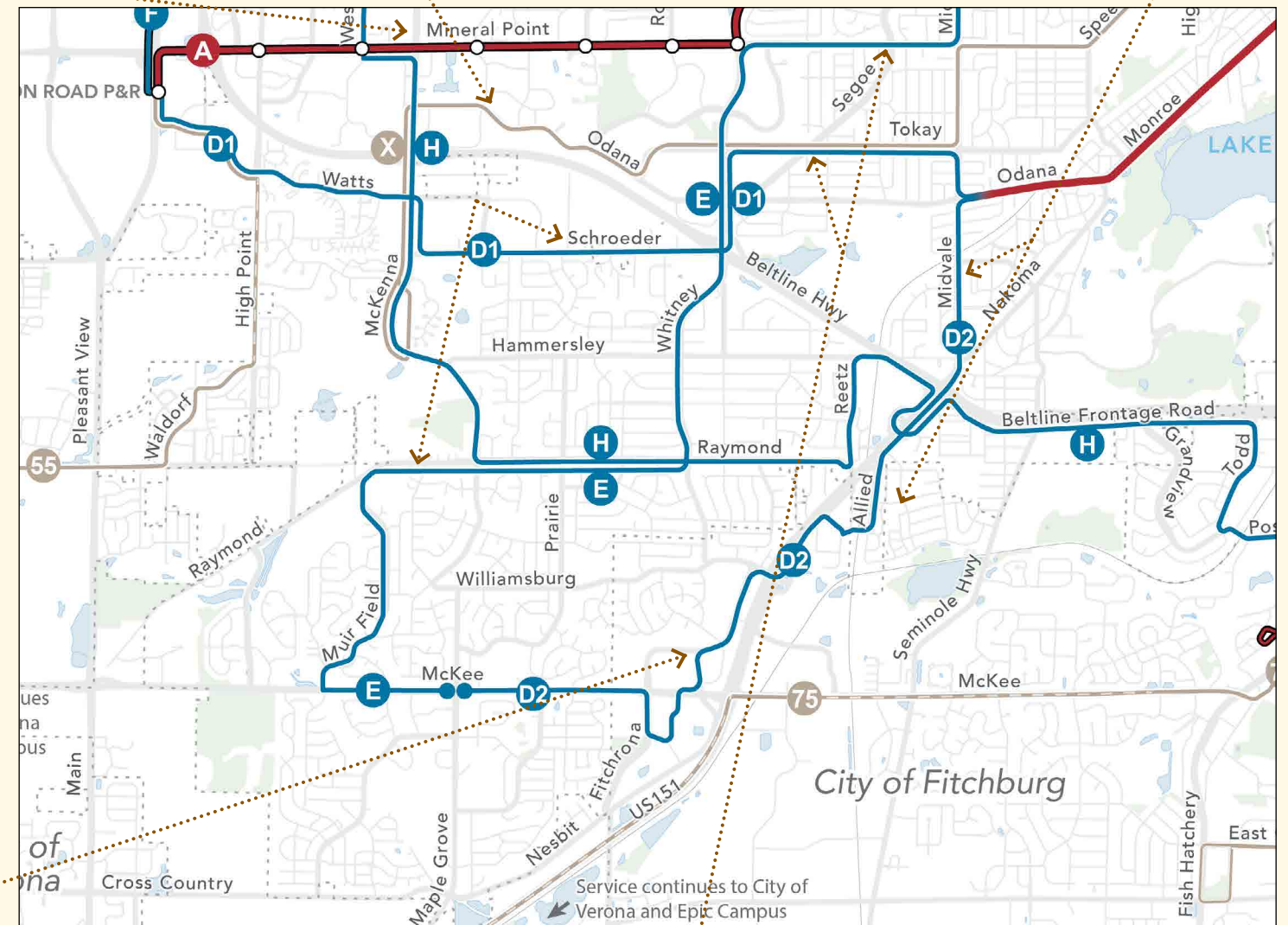
Frequency on Odana Road west of Whitney would be downgraded from 60 minute frequency on **Route 73** to peak only service on **Route X**. However, Route X would provide a direct service to UW and Downtown Madison at peak hours serving Gammon Road and Odana Road.

People on Nakoma and Seminole would have to walk out to Midvale, but otherwise pre-covid **Route 19** service would be mostly restored with the proposed **Route D2**.

Existing Network



Draft Network

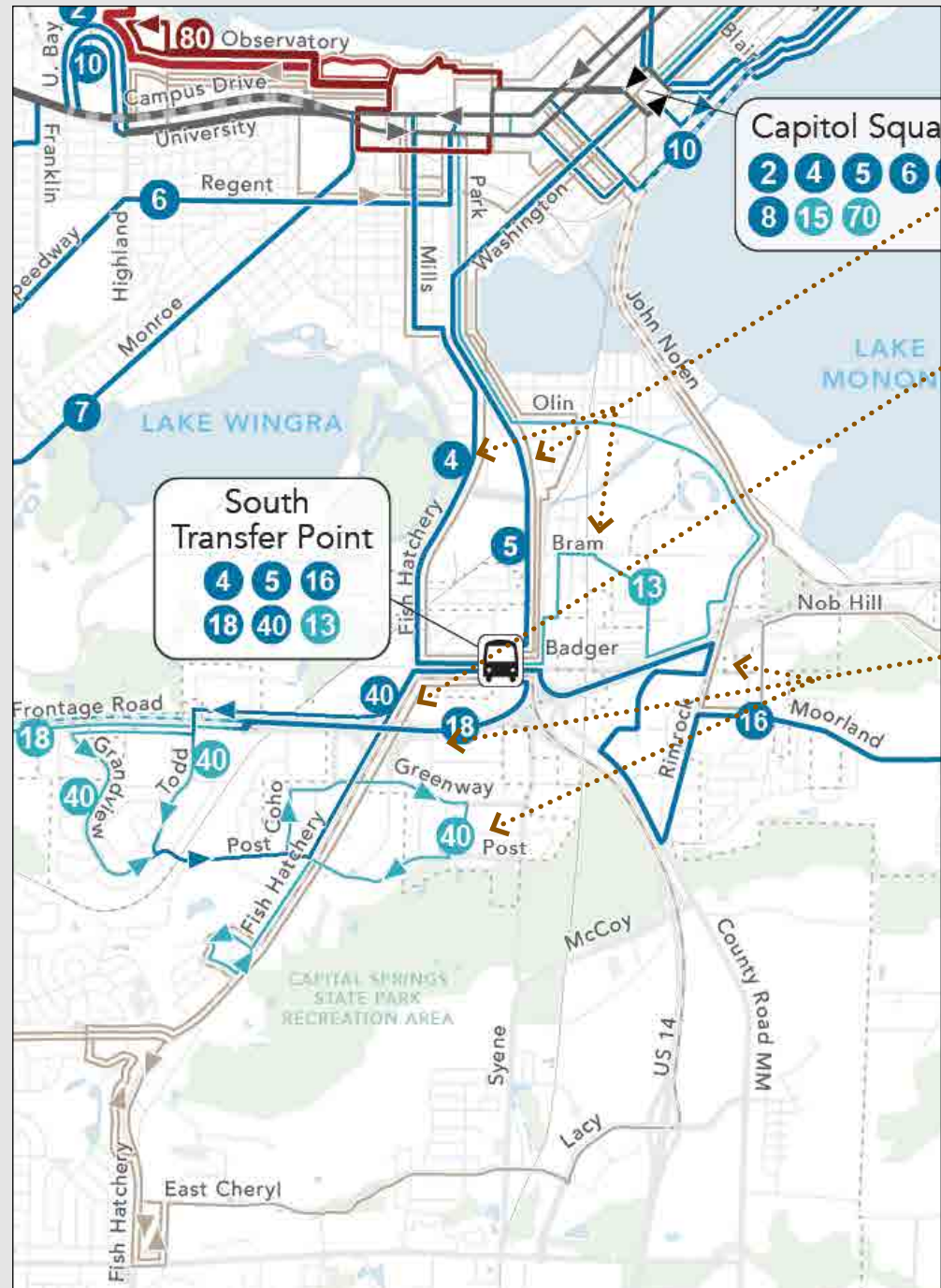


Areas south of the Beltline would go from being served on **multiple existing overlapping feeder routes to West Transfer Point (18, 50, 51, 52, 73)** many of which feature long one-way loops, to **two-way direct service to Downtown every 30 minutes on Routes D1, D2 and E**.

East of Whitney Way, **existing routes 6 and 7** on Mineral Point, Tokay and Odana would be combined into **Route E** (on Mineral Point) and **Route D1** (on Tokay), with service every 30 minutes to Downtown. Existing Route 7 passengers on Odana Road would access service via a walk to Whitney Way, Tokay or Midvale.

Local Network Changes - South

Existing Network



Route B (which would run every 15 minutes, seven days a week, anticipating the future North-South BRT) would replace **multiple infrequent existing routes** both north (**4, 5, 13**) and south (**40**) of the South Transfer Point (Park and Badger), **providing frequent and direct service from the entire South Side through central Madison and to North Madison.**

Route B service would be concentrated on Park St north of Badger, and on Fish Hatchery Road south of Badger. This would put fast and frequent service in walking distance of a majority of South Side residents. However, some residents would be farther from service than they are today, particularly those living east of Fish Hatchery Road north of Badger.

Existing Routes 16, 18 and 40 would be replaced with new **Routes G and H**, with service every 30 minutes. Routes G and H would typically have coordinated operations, with through-riding passengers able to stay on the bus during a driver break at Park and Badger most of the time.

This will facilitate direct travel between the South Side and multiple non-Downtown destinations. The consistent two-way service pattern of Routes G and H will also make travel less confusing, at the cost of requiring passengers in some areas (Grandview, Post) to walk a little farther to service.

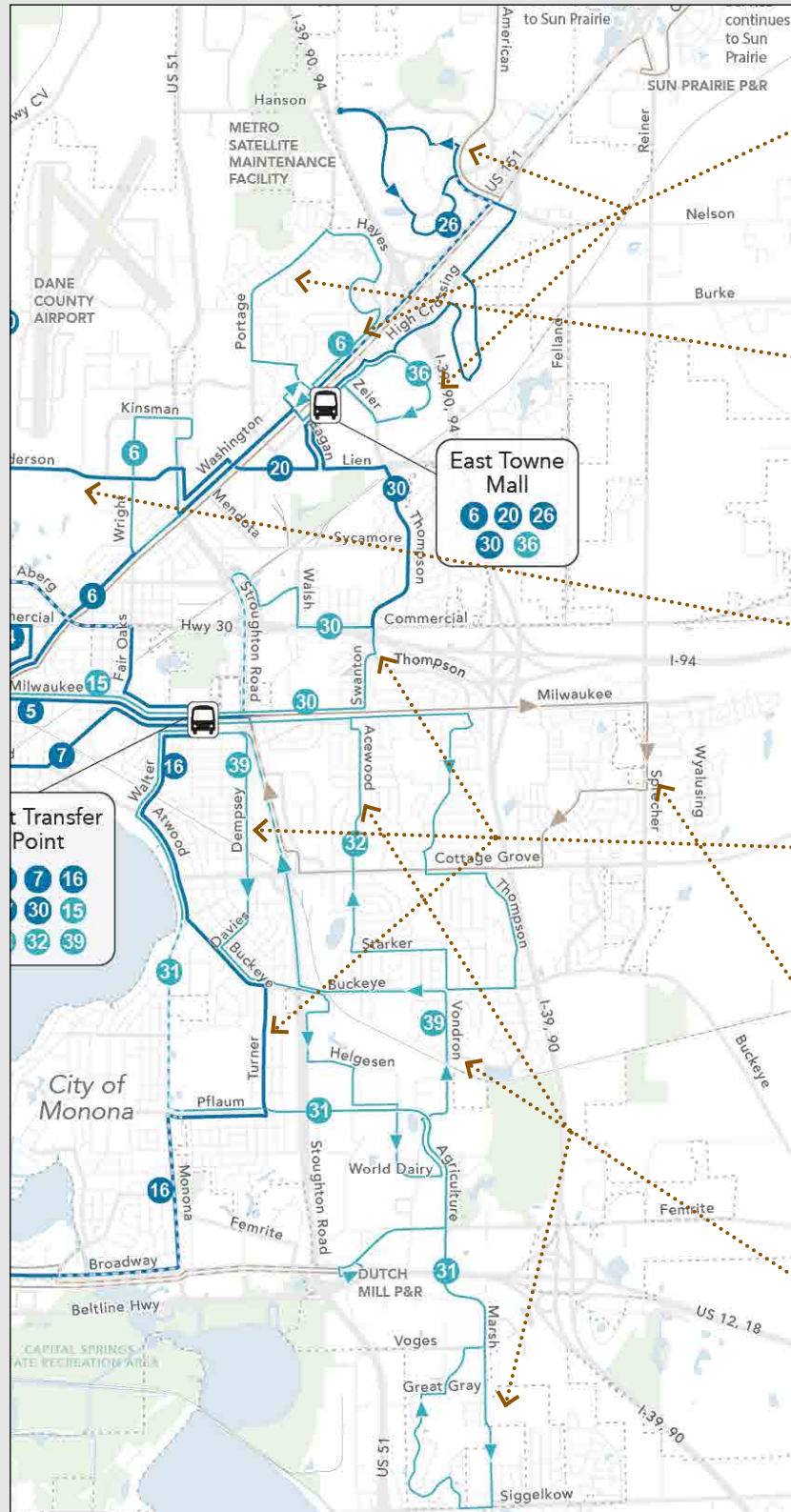
Existing Routes 49 would be replaced with new **Route Z**, with peak-only service on County Road MM, Rimrock, John Nolen into Downtown.

Draft Network



Local Network Changes - East

Existing Network



Existing Routes 6, 23 and 26 would be replaced with **Route A**, with service every 15 minutes or better, seven days a week. Route A would provide direct, frequent service to and through central Madison, following the future East-West BRT alignment. Beyond East Towne Mall, Route A would split into two branches. Route A1 would continue to the Sun Prairie Park & Ride via High Crossing. Route A2 would serve American Center.

The two-way hourly loop on Portage and Hayes, currently serving as the end of **existing Route 6**, would be replaced by **proposed Route P**, with one-way service every 30 minutes. Passengers would either connect to **Route A** on East Washington, or could stay on the same bus continuing as **Route G** to destinations on the east side and to the south and southwest.

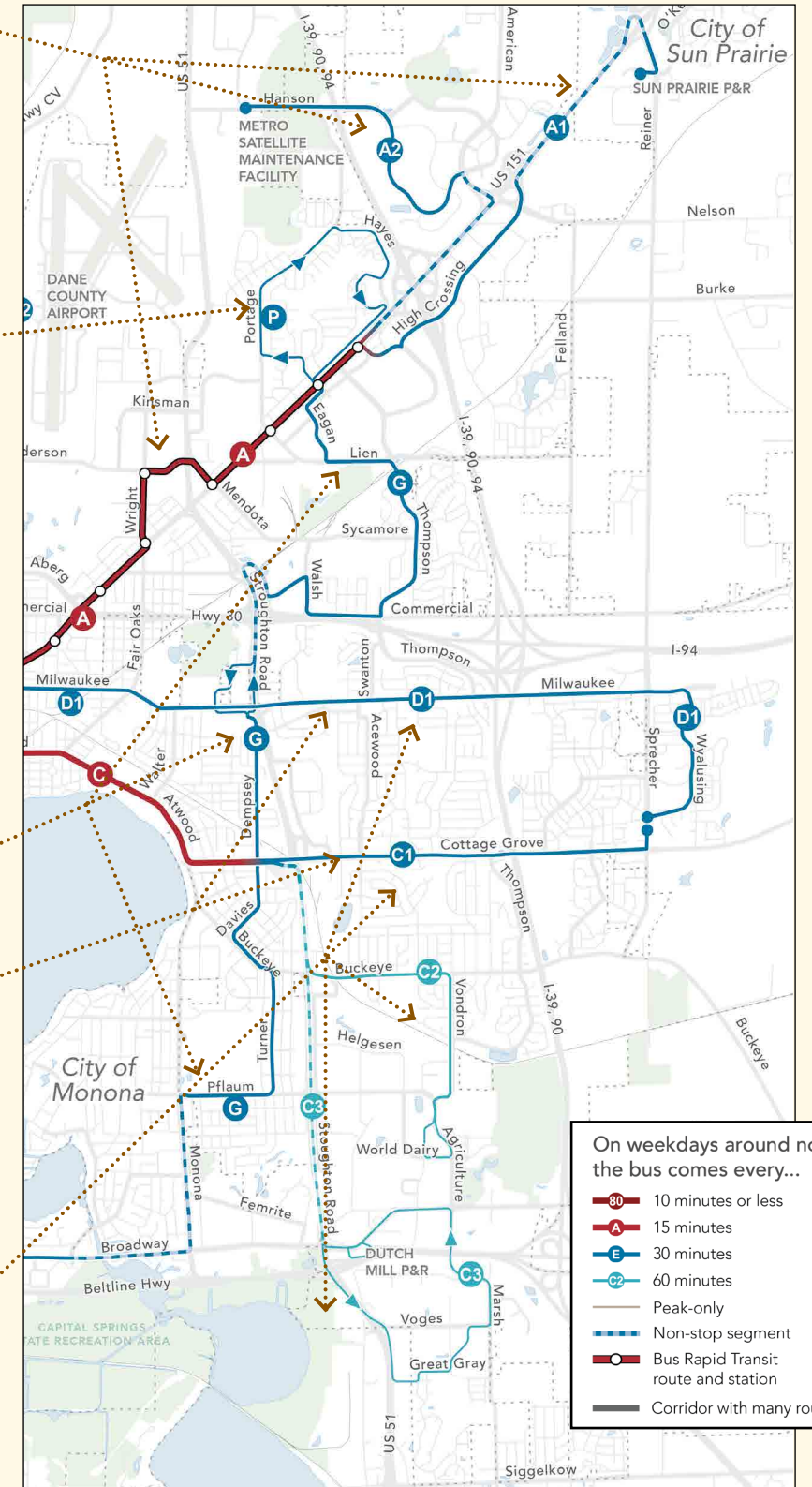
Existing Route 20 would be removed. Passengers connecting between the East and North Sides would connect either to **Route B** at North Street, or to Route D2 at First Street.

Parts of **Routes 16, 30, and 39** would combine into **Route G**, providing direct two-way service every 30 minutes between East Towne Mall and Park / Badger. Connections further southwest would be available with a transfer to **Route H** at Park / Badger.

Existing one-way peak-only service on Milwaukee, Sprecher and Cottage Grove would be upgraded to **two-way all-day service every 30 minutes on Routes C1 and D1**, both of which would travel through central Madison with no transfers required. **C1 and D1** would also connect to North Madison with a single transfer to **Route B**.

Most of **existing Routes 31, 32 and 39** (with largely one-way service every 60 minutes to South Transfer Point), would be eliminated and replaced with parts of **Routes C1, D1, C2, and C3**, all of which would offer direct service to and through central Madison. However, many areas would be a longer walk from service, at least in one direction.

Draft Network



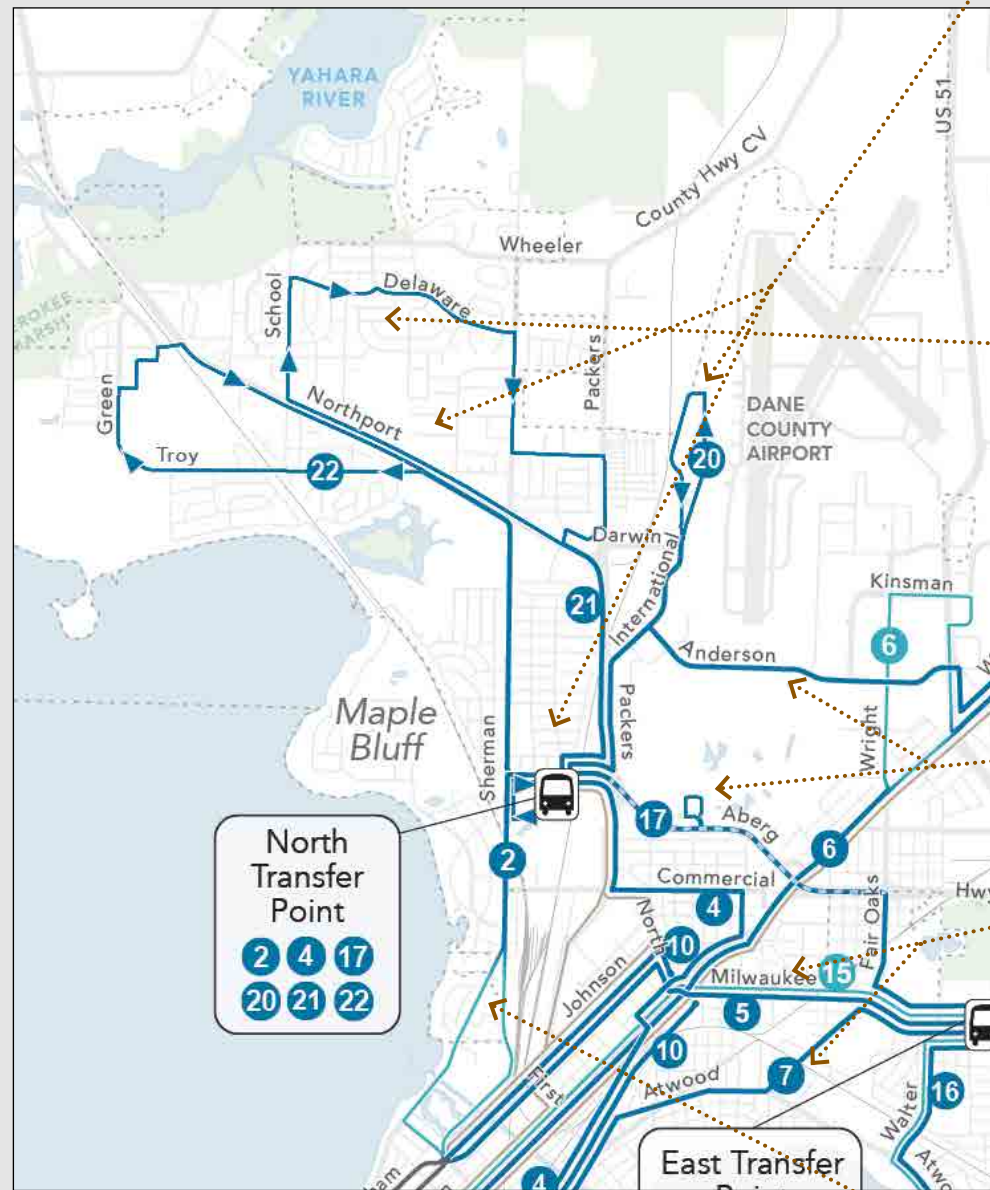
On weekdays around noon, the bus comes every...

- 10 minutes or less
- A 15 minutes
- E 30 minutes
- C2 60 minutes
- Peak-only
- Non-stop segment
- Bus Rapid Transit route and station
- Corridor with many routes

Local Network Changes - North

- On weekdays around noon, the bus comes every...
- 10 minutes or less
 - 15 minutes
 - 30 minutes
 - 60 minutes
 - Peak-only
 - Non-stop segment
 - Bus Rapid Transit route and station
 - Corridor with many routes

Existing Network



Existing feeder service to the North Transfer Point (on Routes 20, 21, 22) would be replaced with **direct service to and through Central Madison on Route B and Route D2.**

Route B would run every 15 minutes or better, seven days per week, anticipating the alignment of the future North-South BRT. It would replace portions of **Route 21** on Packers Ave and **Route 22** on and near Northport Drive, and **Route 4** between Aberg and East Washington.

Route D2 would run every 30 minutes on weekdays, and replace **Route 20**, portions of **Route 21** north of Northport Drive, and **Routes 2 and 22** on Sherman Ave. **D2** would provide direct service between Downtown and the Airport.

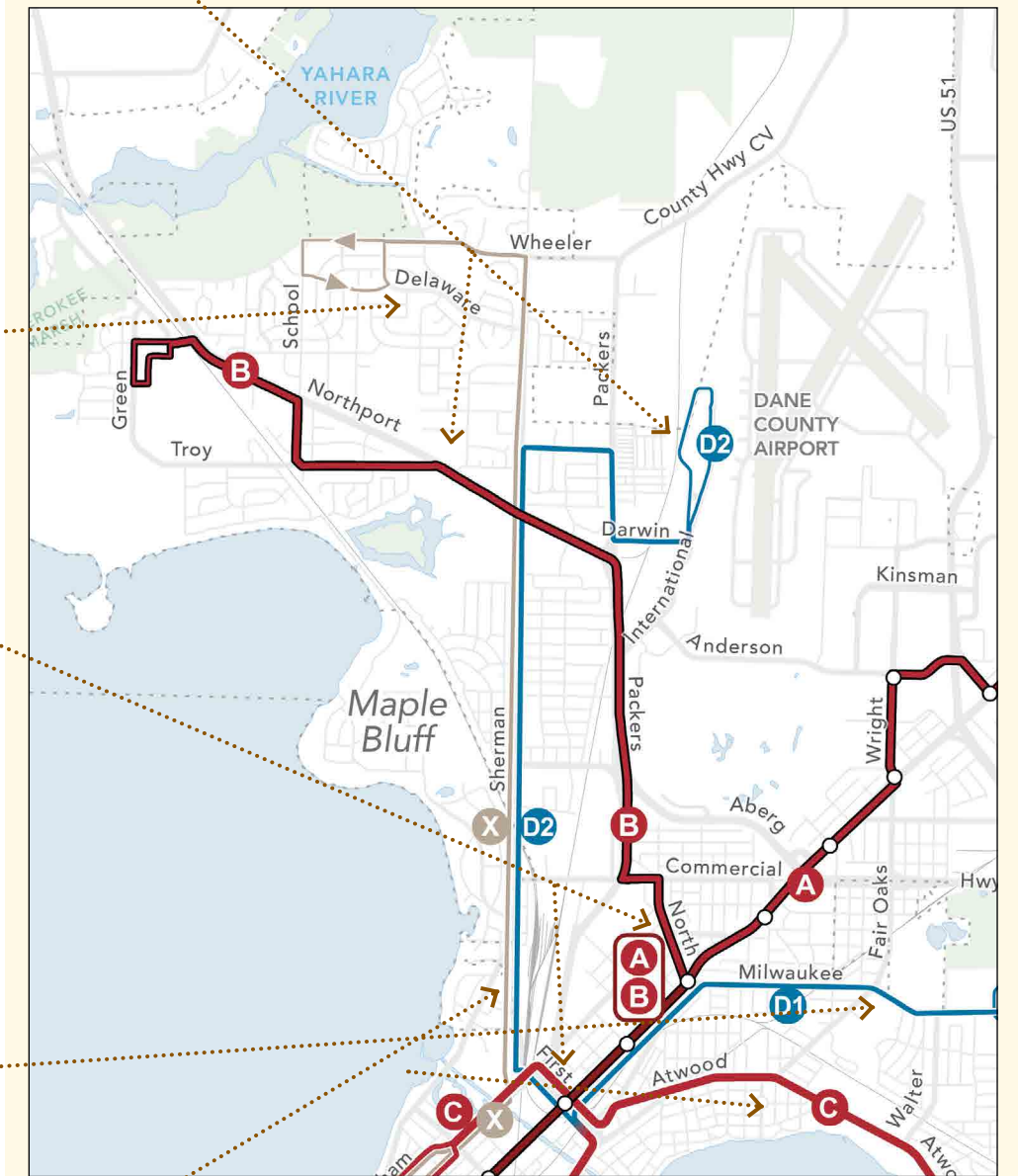
The Delaware Road area would continue to be served, but the one-way all-day service on **Route 21** would be replaced with two-way peak-only service on **Route X** to Downtown and UW.

The connection to the East side provided by **Routes 17 and 20** would be replaced with **connections at North Street** (Route B -> Route A or D1) and **First Street** (Route D2 -> Route A or C). However, there would no longer be service on Anderson or Aberg, which are largely no stop zones anyway. The Pick 'n Save would be served by new stops at Packers and Aberg with a new planned pedestrian connection.

Existing routes coming from East Transfer Point into the Isthmus (5, 7, 15) would be replaced with **Route C** (coming from Cottage Grove Road and Atwood Ave) and **Route D1** (coming from Milwaukee St). As a result, there would generally be service on fewer streets in the half-mile surrounding East Washington & North Street.

Unlike existing **Route 2**, the proposed **Route D2** would not split service between Fordem and Sherman Ave. People living in the southern portion of Sherman Ave would need to walk to either Fordem Ave or Johnson Street, although service would be more frequent in both cases. D2 would travel towards downtown via Jenifer Street to allow for connections towards eastern destinations.

Draft Network



4 Outcomes of Implementing the Draft Plan

Slightly fewer people near any bus stop. Many more people near frequent service.

The number or percentage of people near available transit service is called *proximity*.

Proximity to service of any type is a good measure of an agency's success towards a coverage goal. Proximity does not tell us if service is useful, only that it is nearby.

In pursuit of a coverage goal an agency will spread service thinly, to cover as many people as possible. This means routes have low frequencies and circuitous routing. A route that is near many people is helping an agency meet a Coverage goal, even if it is not useful to most people, most of the time.

Proximity to frequent service speaks more to a ridership goal. Frequent service can be useful for more trips and tends to attract higher ridership.

The Proposed Draft Network is more focused on attracting high ridership than maintaining high coverage. The proximity outcomes of this network reflect that shift:

Residents near Transit

The bar chart at top right shows the percentage of City of Madison residents who would be within a 1/4 mile walk of any service, or frequent service.

- In the Proposed Draft Network, 73% of Madison residents would be near any **all-day service** (compared to 79% today).
- The number of residents near **frequent all-day service** (every 15 minutes or better) would nearly quadruple (from 11% to 42%).
- Because there would be service on fewer streets, some people would have to walk further to reach their nearest bus stop. The walk distance to the nearest bus stop would increase by about 300 feet for the median Madison resident, about the length of the short side of a Downtown block.

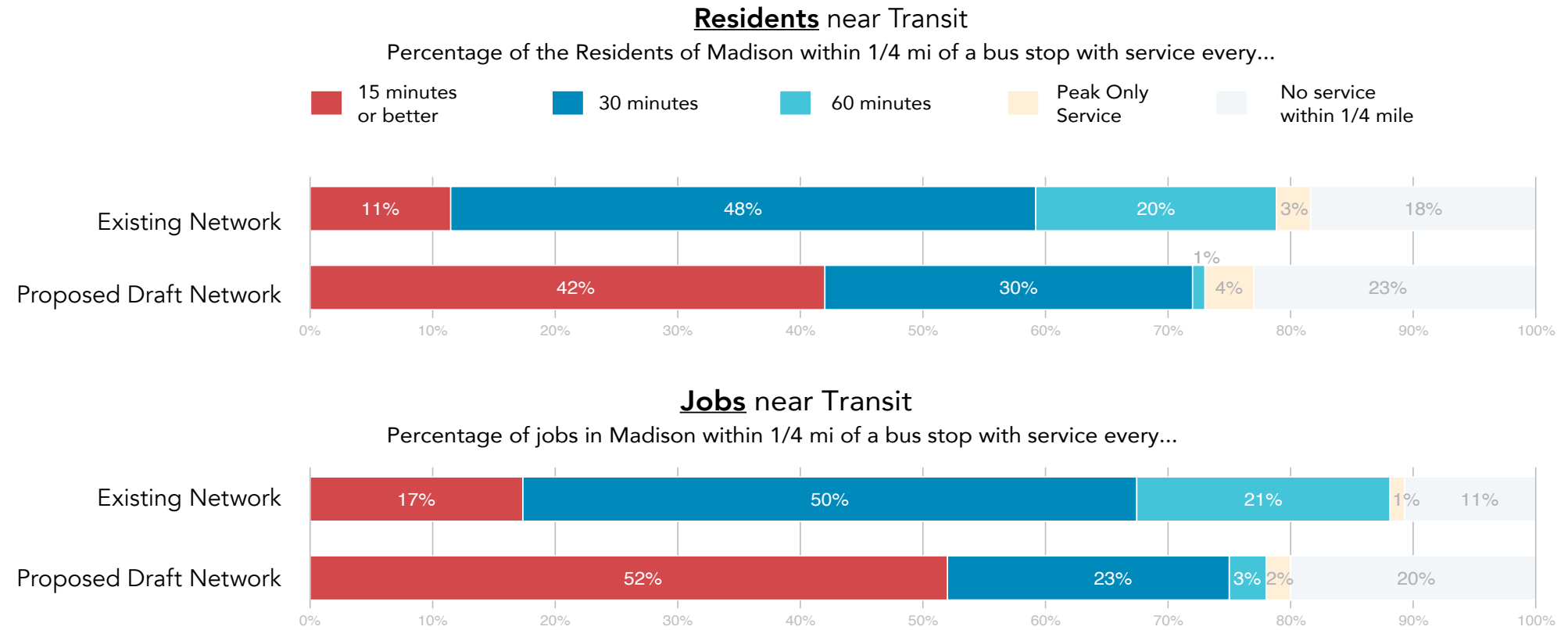


Figure 15: Proximity of All Residents and jobs, to transit. This chart shows percentage of people near service of different frequencies.

Jobs near Transit

The lower bar chart at top right shows how many jobs in the City of Madison would be within a 1/4 mile walk of any service, or frequent service.

- In the Proposed Draft Network, 78% of jobs in Madison would be near **any all-day service** (a decrease from 88% with the Existing Network).
- The number of jobs near **frequent all-day service** would more than triple, from 17% to 52%.

About -6% fewer Madison residents would live within 1/4-mile of all-day transit service. But, nearly four times as many Madison residents would live within 1/4-mile of service every 15 minutes or better.

Proximity to Transit - People of Color and People with Low Incomes

Equity in Proximity to Transit

Federal Title VI regulations require Metro Transit to show that the impacts of major service changes do not fall disproportionately on people of color and people with low incomes.

But it's also good practice in measuring equity outcomes to consider the specific impacts of any plan on these two populations, so long as they are considered together.

This is because talking about "low income" people in Madison blends the very different experiences of temporarily low-income young adults on the one hand, and people experiencing generational poverty on the other.

For this reason, in considering equity outcomes, the project team always reports outcomes for low-income people concurrently with incomes for people of color, as we have on this page.

People of Color

In the Existing Network:

- 79% of all residents and the same percentage of people of color in Madison live within 1/4-mile of all-day transit service.
- 15% of people of color live near frequent service, compared to 11% of all residents.

With the Proposed Draft Network:

- The number of people of color near **any all-day service** would decrease from 79% to 73%.
- The number of people of color near **frequent all-day service** (every 15 minutes or better) would increase from 15% to 40%.

People with Low Incomes

In the Existing Network:

- 91% of people with low incomes in Madison are within 1/4-mile of all-day transit service, compared to 79% of all Madison residents.
- 32% of Madison residents with low incomes¹ live near frequent service, compared to just 11% of all residents.

With the Proposed Draft Network:

- The number of people with low incomes near **any all-day service** would decrease from 91% to 85%.
- The number of people with low incomes near **frequent all-day service** would increase from 32% to 65%.

¹ For the purposes of this analysis, we define "low income" as people from households below 100% of the federal poverty level.

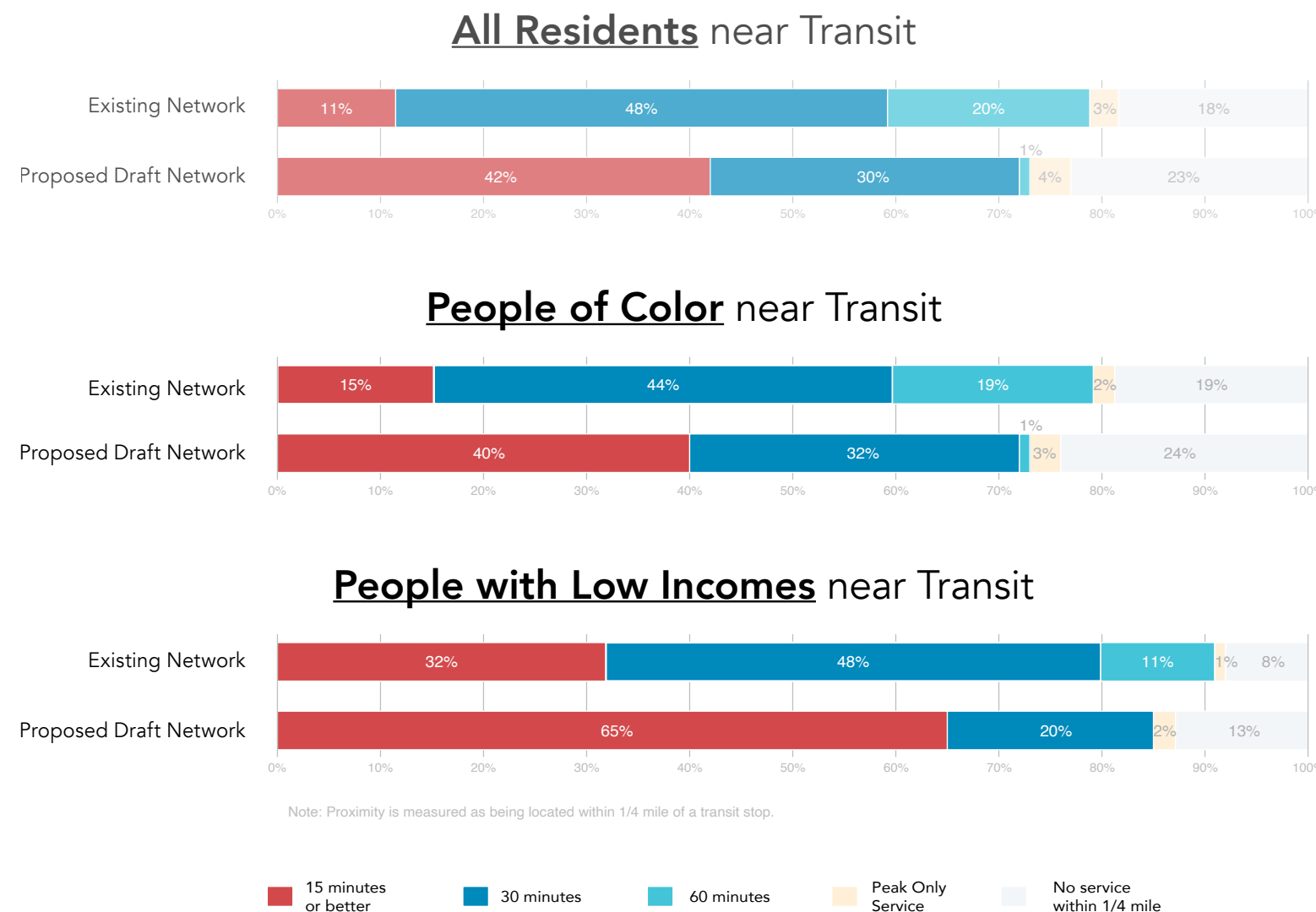


Figure 16: Proximity of All Madison Residents, People of Color, and People with Low Incomes to transit. This chart shows percentage of people near service of different frequencies.

In proximity terms, people of color and people with low incomes would experience the same type and a similar level of change as all Madison residents.

Proximity to Transit - Seniors and Youth

Some people over age 65 and most people under age 18 cannot drive. As a result, some people in these age groups may be more likely to depend on transit, either regularly or occasionally.

This page looks at how the Proposed Draft Network would change proximity to transit for Madison residents over the age of 65 (seniors), and those under age 18.

Senior Residents

Seniors in Madison are spread out throughout the city at relatively low densities; on average, they tend to live farther from the city center than other age groups. As a result, senior residents are less likely to live near transit service than the average Madisonian.

In the Existing Network:

- 73% of seniors live within 1/4 mile of all-day service, compared to 79% of all Madison residents.
- 3% of seniors live near frequent service, compared to 11% of all residents.

With the Proposed Draft Network

- The number of seniors near **any all-day service** would decrease from 73% to 62%.
- The number of seniors near **frequent all-day service** (every 15 minutes or better) would increase from 3% to 29%.

Residents under 18

Youths tend to have a similar population distribution between different areas of Madison, except in central Madison. Residents under 18 are the least likely to live in the Downtown or UW areas, compared to other age groups. As a result, residents under 18 are also less likely to live near transit service than the average Madisonian.

In the Existing Network:

- 72% of residents under 18 live within 1/4 mile of all-day service, compared to 79% of all Madison residents.
- 4% of residents under 18 live near frequent service, compared to 11% of all residents.

With the Proposed Draft Network:

- The number of residents under 18 near **any all-day service** would decrease from 72% to 64%.
- The number of residents under 18 near **frequent all-day service** would increase from 4% to 27%.

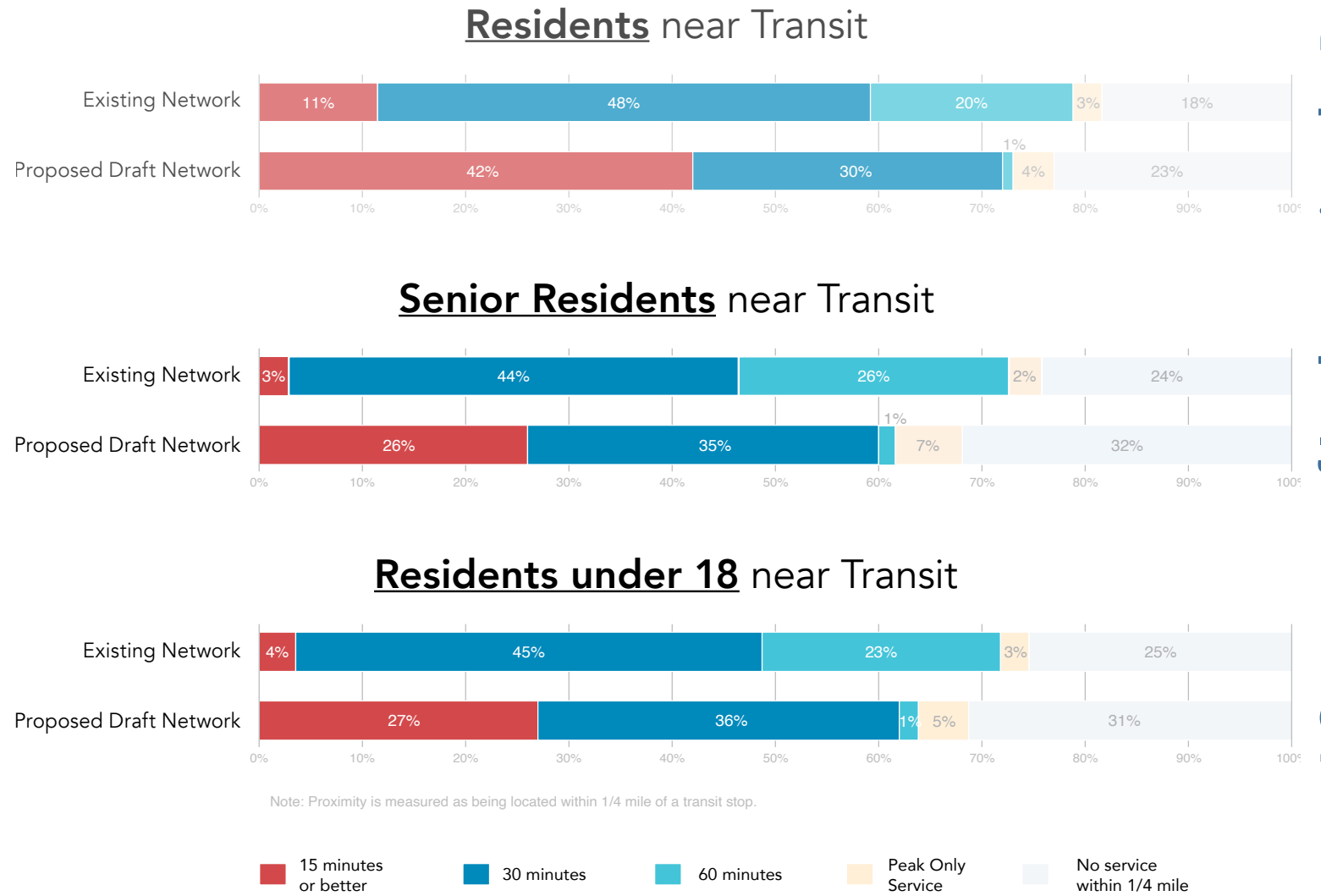


Figure 17: Proximity of Residents of all ages, Senior Residents, and Youth, to transit. This chart shows percentage of people near service of different frequencies.

In proximity terms, seniors and youth would see the same type and a similar level of change as Madison residents of all ages.

Summary of the Proposed Draft Plan's Impacts on Proximity to Transit

Change in Proximity to Any Transit Service

The table below compares the number of people and jobs near all-day transit between the Existing Network and the Proposed Draft Network

The Proposed Draft Network would reduce the number of people near transit. The magnitude of the reduction is similar across race and income, but is slightly higher among youth and seniors.

	Existing Network	Proposed Draft Network
All Residents	79%	73%
People of Color	79%	73%
People with Low Incomes	91%	85%
Senior Residents	73%	62%
Youth	72%	64%
Jobs	88%	78%

Change in Proximity to Frequent Transit Service

The Proposed Draft Network would greatly increase the number of people near frequent transit, every 15 minutes or better on weekdays.

More than half of Madison's jobs would be within 1/4 mile of transit that comes every 15 minutes or better.

	Existing Network	Proposed Draft Network
All Residents	11%	42%
People of Color	15%	40%
People with Low Incomes	32%	65%
Senior Residents	3%	29%
Youth	4%	28%
Jobs	17%	52%

Access - What makes a transit network useful?

Access and Freedom

Wherever you are, there are a limited number of places you could reach in a given amount of time. These places can be viewed on a map as a blob around your location.

Think of this blob as a “wall around your life.” Beyond this area are things you can’t do because it simply takes too long to get there. The extent of this area affects your options in life: for employment, school, shopping, or whatever places you want to reach.

The technical term for this is access, but it’s also fair to call it freedom, in the physical sense. If you can go to more places, you have more choices, so in an important sense you are more free.

How Transit Expands Access

The basic point of transit is to increase the number of useful places people can access in a reasonable amount of time without driving, beyond the area they could reach on their own.

On transit, the extent of your access is determined by:

- The **network**, including transit lines with their frequency, speed, and duration. These features determine how long it takes to get from any point on the network to any other point.
- The **layout of the city**. This determines how many useful destinations can be located near transit stops. For example, where there are more people or useful destinations near a given stop, good access from that point is of value to more people.
- Your **location**. This determines which routes are close and frequent enough to be useful to you.

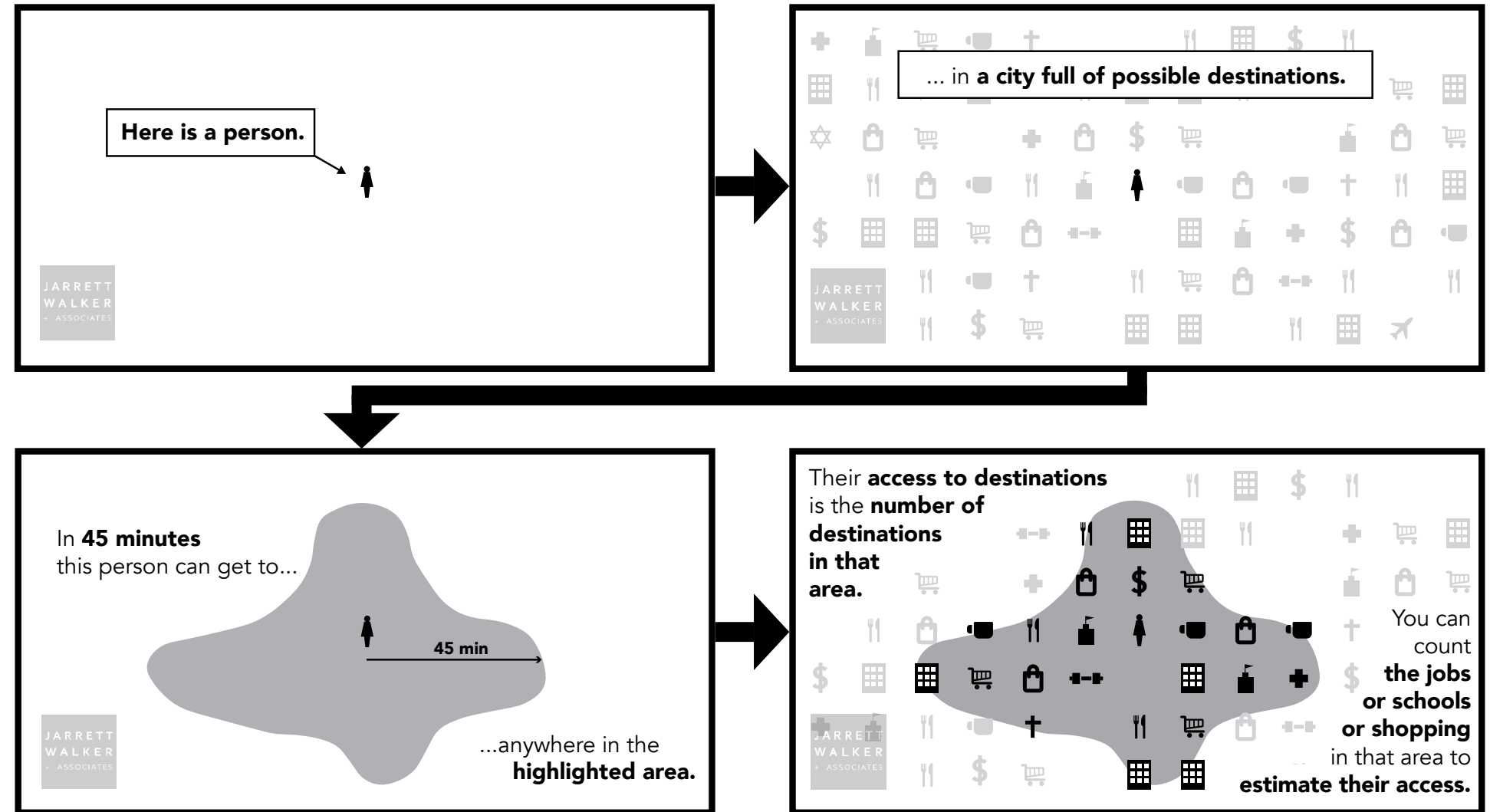


Figure 18: Access is the ability to get from your current location to places you need to go. The more places you can access in a reasonable amount of time, the more freedom you have to live your life in the way you need. Transit helps increase this freedom by providing access to more places, without needing to drive.

Transit helps expand the area reachable in a given amount of time, without needing to drive. The more the transit network makes this possible, the more useful it is.

Access - Travel Time Maps

Measuring Access and Freedom

To illustrate access from any particular point in Madison, we can create a travel time map (also known as an isochrone).

The travel time maps on this and the following pages show where you could get to, on average¹, in 45 minutes **door-to-door (including walking, waiting and riding)**, from a given starting point at noon on a weekday. These maps compare existing service to the Proposed Draft Network.

Our choice of noon, rather than morning or evening rush hour, is intentional. While travel peaks at rush hours, many different kinds of people need to travel at midday. The retail and restaurant industries tend to start or change shifts at midday. Office workers need to travel for personal appointments or meetings. College students often finish or start classes at midday. And any parent values being able to get home to pick up a sick kid from school.

Where to find the maps

The maps on this and the following pages show three examples. See Appendix A for a full set of isochrone maps from many starting locations across Madison.

¹ By "on average," we mean approximately 50% of the time, assuming random departure times within a one-hour window, and based on a combination of existing scheduled bus speed and observations of actual speeds at different times of day.

How to use these maps

Dark blue shows no change. These areas can usually be reached in 45 minutes on the Existing Network, and would still be reachable within 45 minutes using the Proposed Draft Network.

Light blue shows improvement. These areas cannot usually be reached within 45 minutes on the Existing Network but would be reachable within 45 minutes using the Proposed Draft Network.

Gray shows losses. These areas can usually be reached in 45 minutes in the Existing Network today, but it would take longer using the Proposed Draft Network.

When reviewing these maps, remember that:

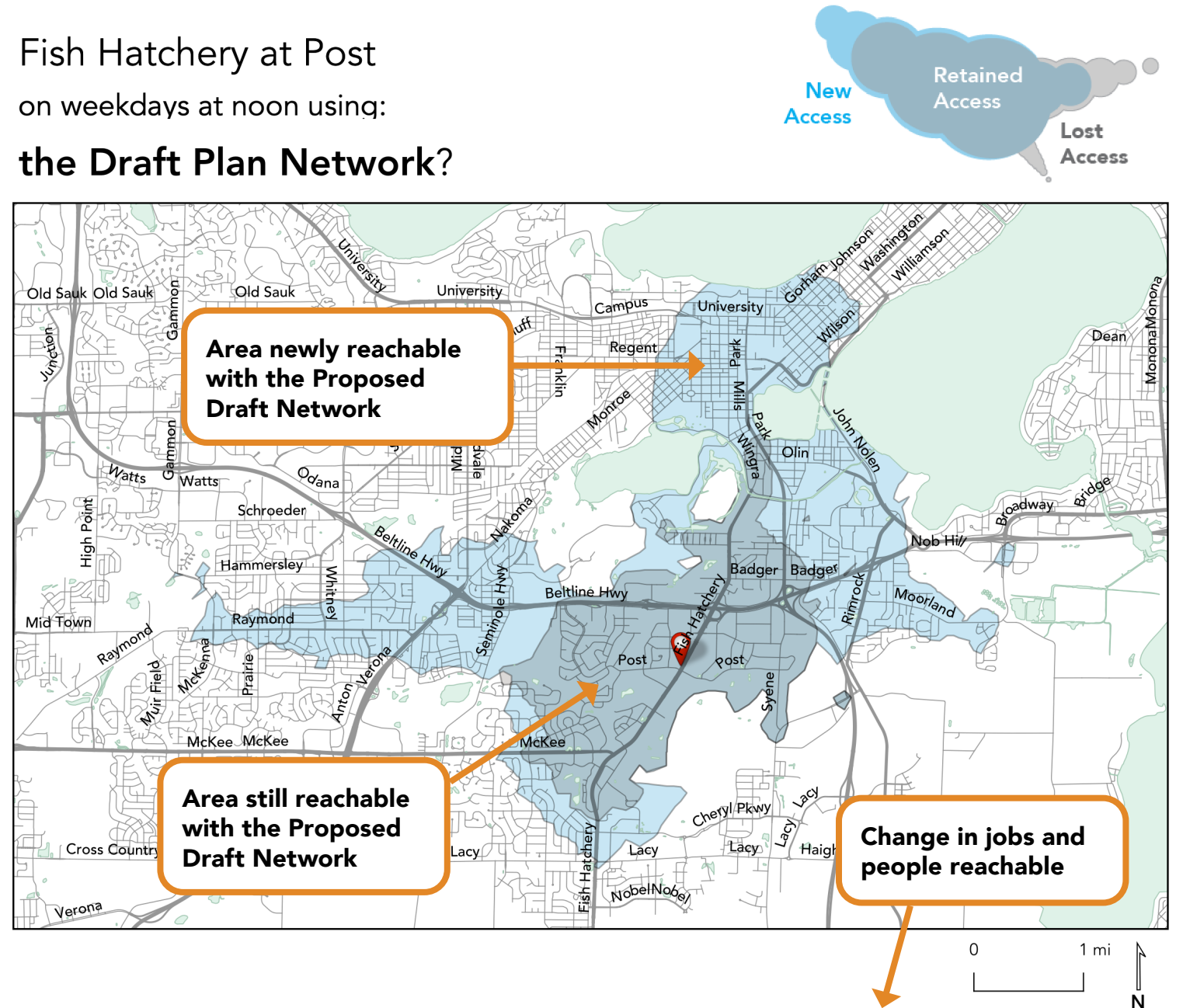
- Waiting time counts!² On average, you will wait one-half of the time between two scheduled buses.
- In most cases, a longer walk to a high-frequency route can get people farther, and faster, than a shorter walk to an infrequent route.
- Some of the access shown in these maps isn't reached on a single route, but requires a transfer.
- It's not just about the size of the area, but also what's inside. For this reason, we've shown the change in the number of people and jobs that can be reached, in addition to the areas on the maps.

Note that the people and jobs reachable in 45 minutes is calculated from the Greater Madison MPO 2016 TAZ Model data.

² Even if you time your departure just right and don't wait at the bus stop, a lower-frequency route often makes you wait at your destination because it can force you to arrive very early (rather than be slightly late).

How far can I travel in **45 minutes** from Fish Hatchery at Post on weekdays at noon using:

the Draft Plan Network?



	Existing Network	Draft Plan Network	Change	% Change
Residents Accessible in 45 minutes or less	17,400	78,800	+61,400	+354.0%
Jobs Accessible in 45 minutes or less	15,400	75,300	+59,900	+388.0%

Figure 19: Example of Travel Time Map (Isochrone) from Fish Hatchery Road at Post Road.

Travel Time Map: Downtown Example

Many transit routes in the Existing Network converge Downtown, where residential and job densities are high. This results in both a large area being reachable from here, as well as many jobs being reachable from here.

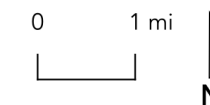
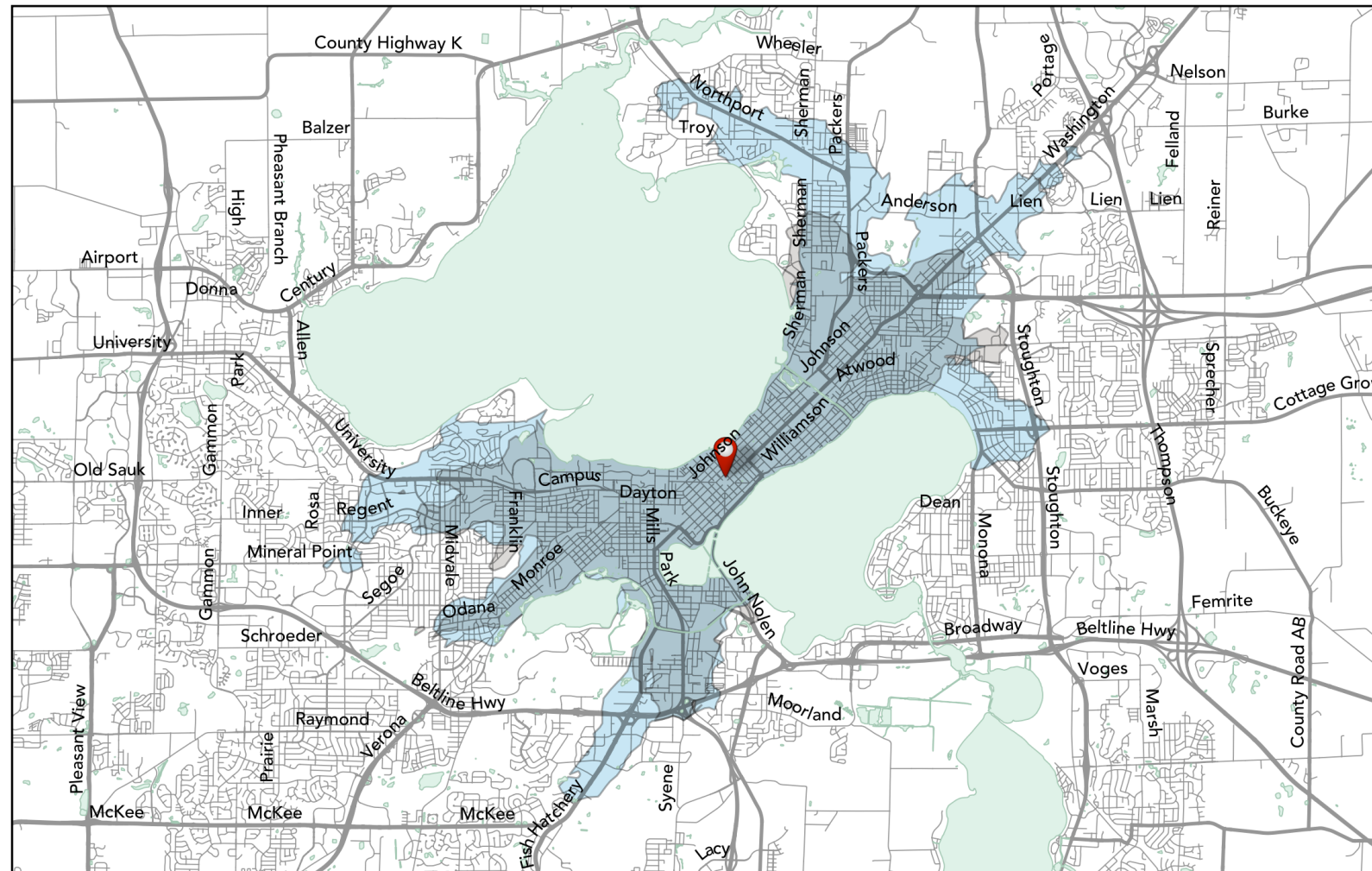
For employers located in this location, it also results in a large number of potential employees living within a reasonable transit travel time, as shown by the "Residents Accessible" number in the bottom left of this map.

In the Proposed Draft Network, the number of people and jobs accessible from the center of Downtown Madison would increase because of routes to multiple areas running every 15 minutes on direct paths, especially

- Route A (following the future East-West BRT alignment), running every 15 minutes, would expand access from Downtown to both the east and west.
- Route B (anticipating the future North-South BRT alignment) would expand access to North and South Madison with continuous, frequent service from Fish Hatchery Road, through Downtown, and onto Northport Drive.
- Route C would result in access improvements to and from East Madison via Atwood Avenue and Cottage Grove Road.

How far can I travel in **45 minutes** from **Downtown - Capitol Square** on weekdays at noon using: **the Draft Plan Network?**

* Compared with the Metro Network as of Spring 2020



	Existing Network	Draft Plan Network	Change	% Change
Residents Accessible in 45 minutes or less	97,700	125,600	+27,900	+28.5%
Jobs Accessible in 45 minutes or less	93,500	113,600	+20,100	+21.5%

Travel Time Map: North Madison Example

From the intersection of Northport Drive and School Road, the Existing Network provides access to relatively few opportunities.

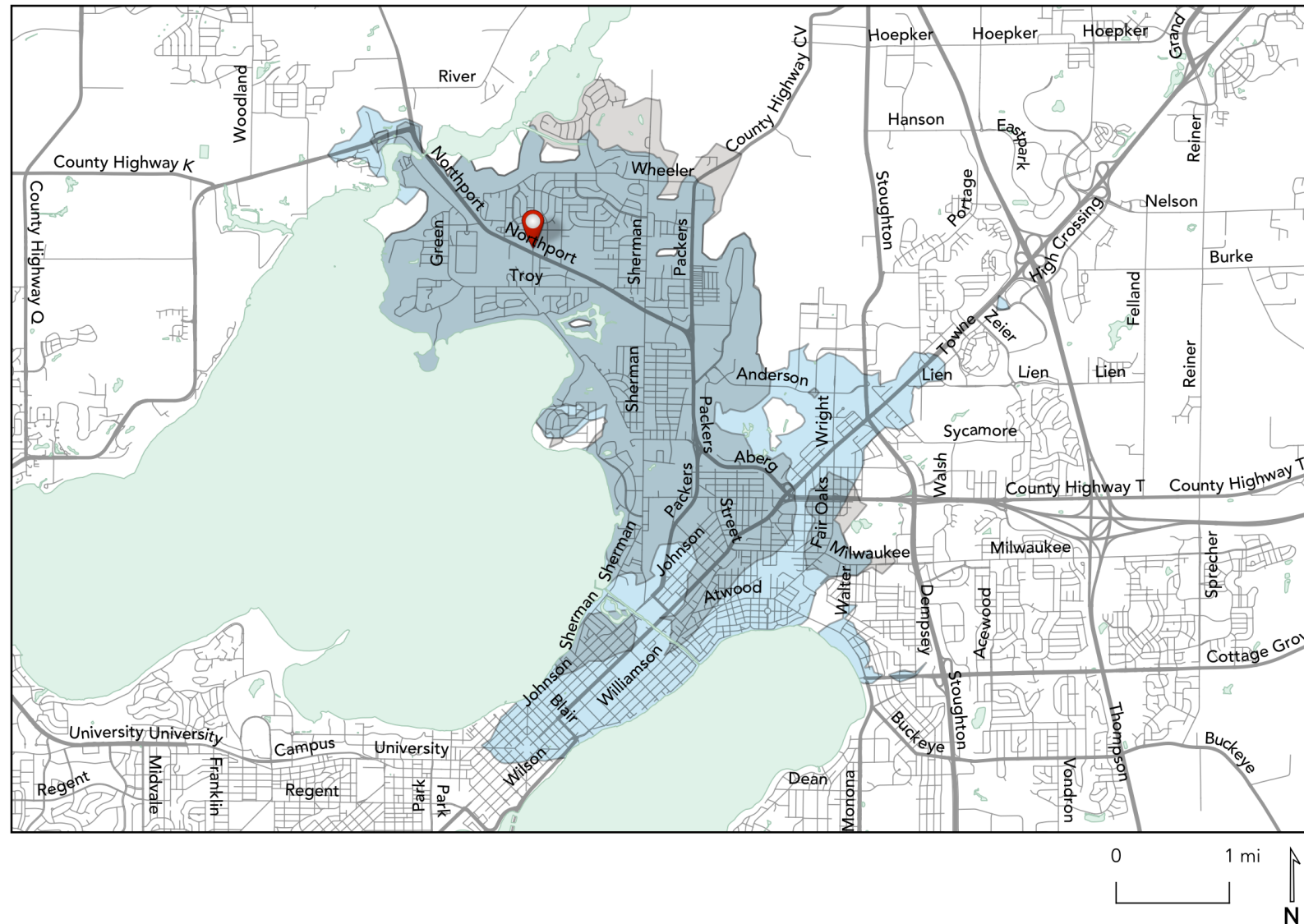
Part of the issue is the requirement for connections at the North Transfer Point, which impose a 5 to 10 minute wait for passengers travelling into Downtown.

With the Proposed Draft Network, access to areas in the Isthmus and on the east side would improve, because:

- The direct and frequent North-South Route B would make it possible to reach Downtown within 45 minutes, with continuous, frequent service along Northport and Packers, through Downtown.
- Transfers to the East-West Route A at North Street and to Route C at First Street would provide faster paths to east and northeast Madison.

How far can I travel in **45 minutes** from **Northport at School** * Compared with the Metro Network as of Spring 2020

on weekdays at noon using:
the Draft Plan Network?



	Existing Network	Draft Plan Network	Change	% Change
Residents Accessible in 45 minutes or less	32,100	54,100	+22,000	+68.5%
Jobs Accessible in 45 minutes or less	12,700	39,600	+27,000	+213.0%

Evaluating Change in Access to Jobs Throughout the City

Job Access

The maps on the previous pages show you access to jobs and people from a single location in Madison.

But what about all parts of the city? The diagram at right depicts how we expand on the previous analysis to show the change in access to jobs for all parts of the city.

The maps on the following pages show how many more (or fewer) jobs could be reached in 45 minutes on transit on weekdays at noon, from anywhere in Madison, using the Proposed Draft Plan. As stated previously, the 45 minute travel time is door-to-door and includes walking, waiting, riding, and any time required for transfers.

The maps we have developed to show job access throughout Madison don't just focus on areas. They focus on where people live. The Proposed Draft Plan is designed to shift some transit operating resources around in order to focus more service in areas where many people would benefit. To see the impacts of that, we display Access Change as a dot-density map where every five residents are represented with one dot.

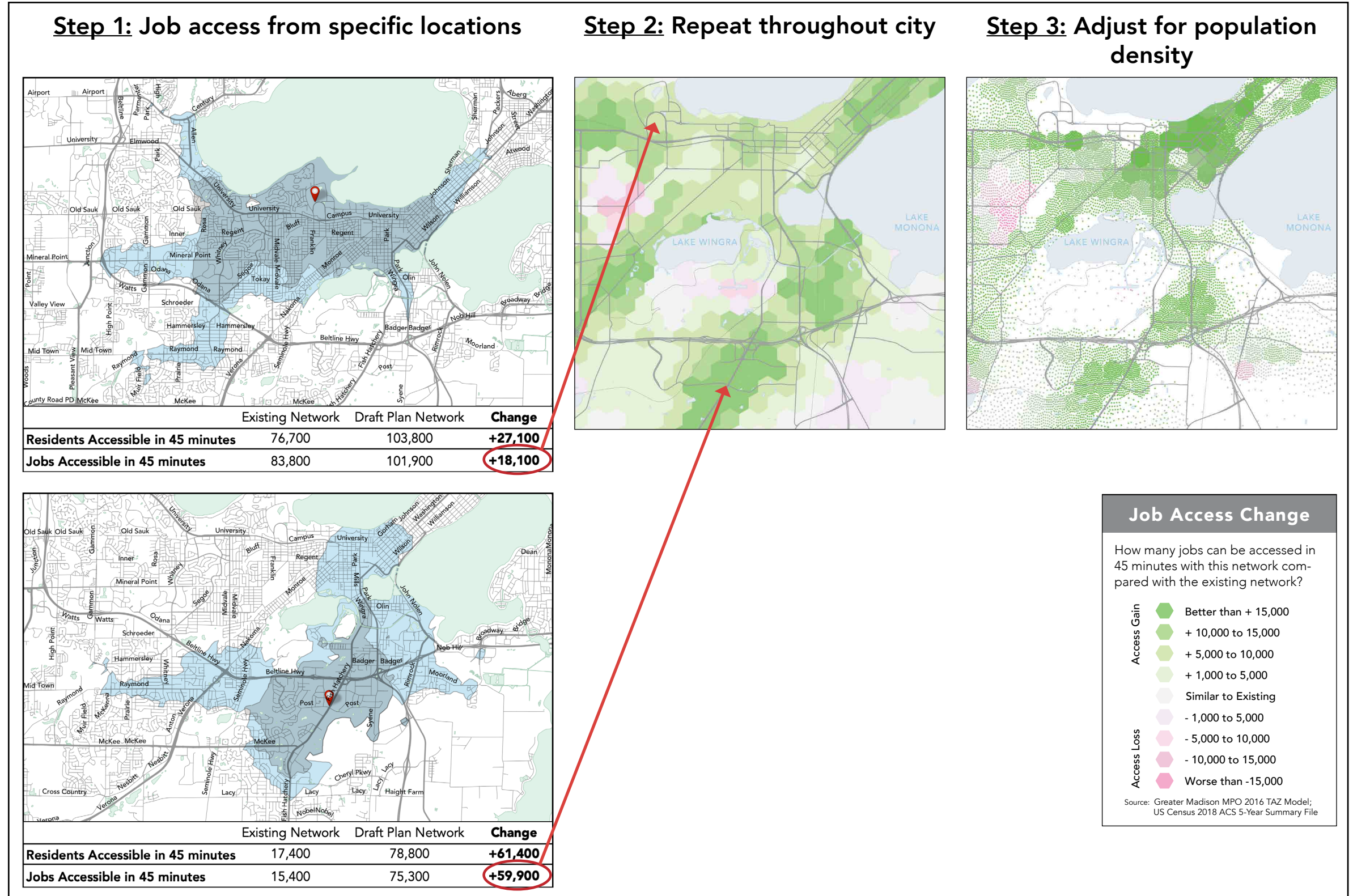


Figure 20: Diagram of the components of citywide change in access to jobs. Job Access is calculated from a grid of points across the city and mapped to show the magnitude of access change throughout the city. This data is then adjusted for population and displayed as a dot-density map with each dot representing five people.

For most people, a large increase in jobs accessible by transit within 45 minutes.

The vast majority of people in Madison live in areas where job access would increase substantially with the Proposed Draft Network. This is because many more people would be near frequent service, fewer transfers would be required from outlying areas to reach Downtown, and bus routes would generally follow more direct routes.

89% of Madison residents live where job access in 45 minutes would increase by at least +1,000 jobs.

59% of Madison residents live where job access in 45 minutes would increase by at least +10,000 jobs.

In the map at right, each dot represents five residents. The color of the dot indicates whether residents in a particular area would experience an increase or a decrease in job access.

- **Green** show places where people's access to jobs by transit would increase compared to the Existing Network.
- **Gray** areas show places where people's access to jobs by transit would not change much.
- **Pink** areas show where people's access to jobs by transit would decrease.

Access to jobs

With the Proposed Draft Network, the median Madison resident could reach **44,000 jobs within 45 minutes** by transit and walking, an **83% increase** over the Existing Network.

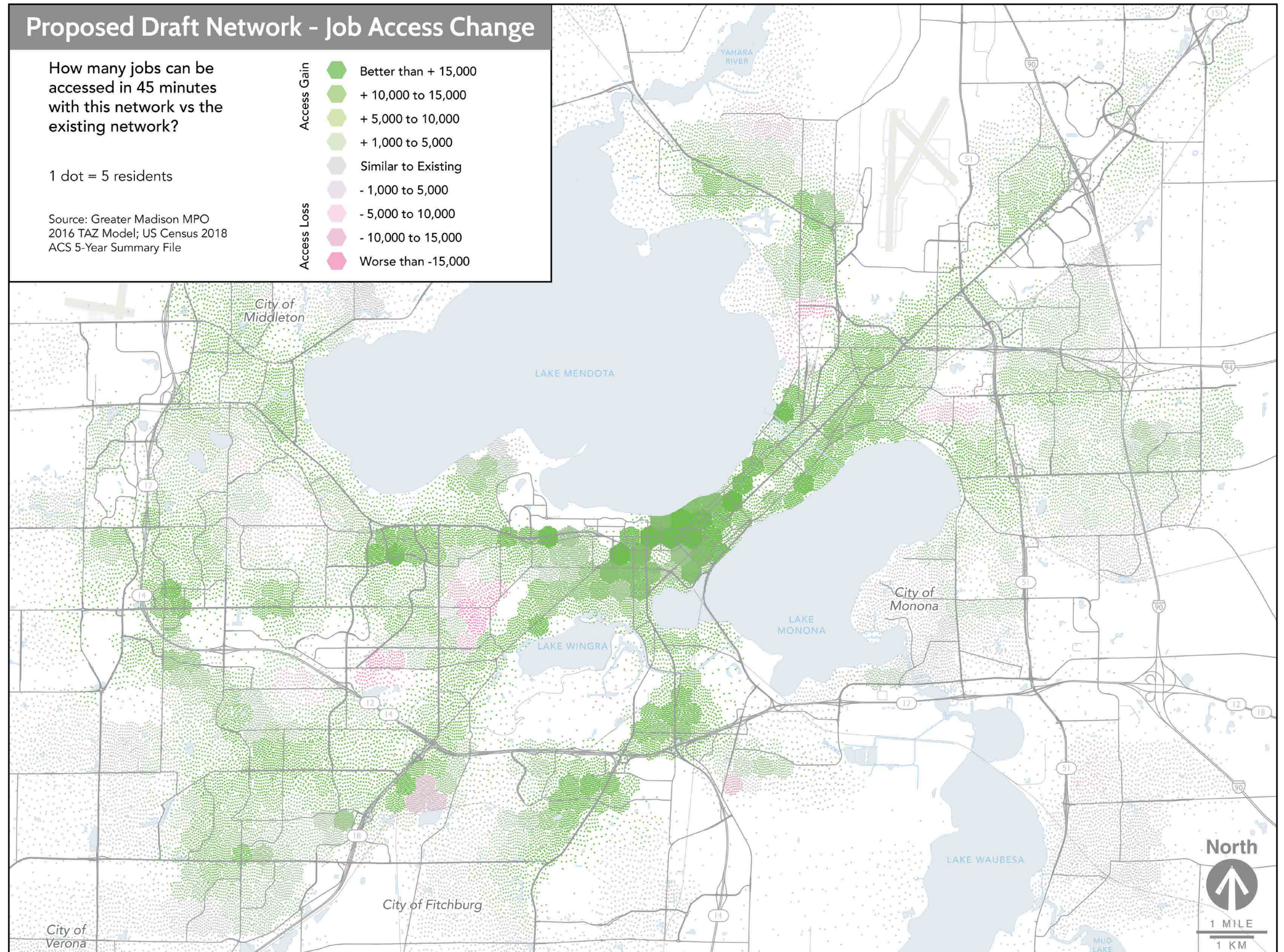
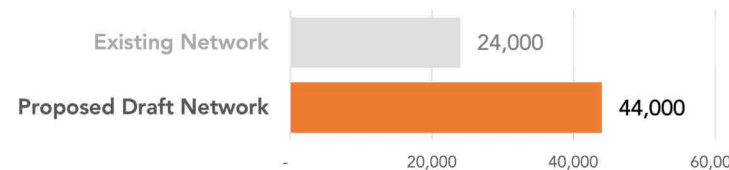


Figure 21: Map showing the change in number of jobs accessible within 45 minutes with the Proposed Draft Network vs. the Existing Network from residential locations throughout Madison and surrounding communities.

Change in Job Access - People of Color

Equity in Job Access

The Proposed Draft Plan would have positive impacts on job access for the average Madisonian. But how can we know whether those benefits reach marginalized populations? This page discusses how job access by transit would change for people of color if the Proposed Draft Network were implemented. The following page shows the same measure for people with low incomes.

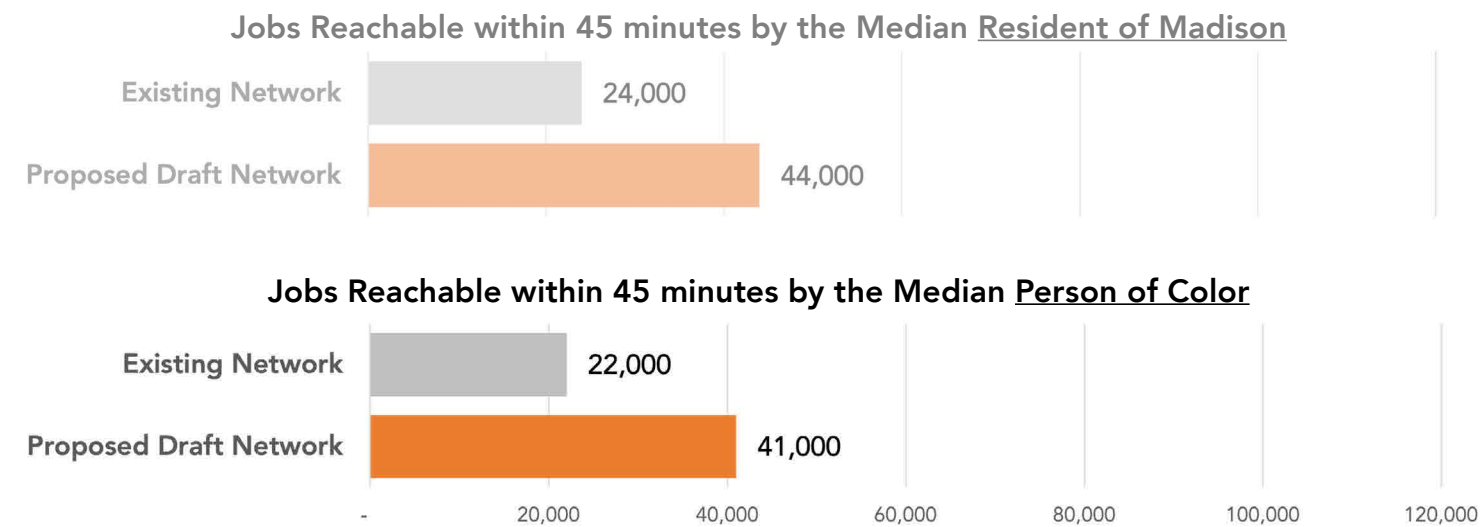
On the map at right, each dot represents one person of color. The color of each dot represents the change in the number of jobs accessible from each location within 45 minutes by transit. As in prior maps, **green** represents increased access and **pink** represents losses in job access.

The median person of color would be able to reach 41,000 jobs within 45 minutes by transit and walking, an 86% increase.

As can be seen by the color distribution on the map, this improvement would be experienced by the vast majority of people of color in Madison.

90% of people of color in Madison live where job access in 45 minutes would increase by at least +1,000 jobs vs. 89% of all Madison residents.

62% of people of color in Madison live where job access in 45 minutes would increase by at least +10,000 jobs vs. 59% of all Madison residents.



In access terms, people of color would benefit from improvements in job access by transit at similar rates to the general population.

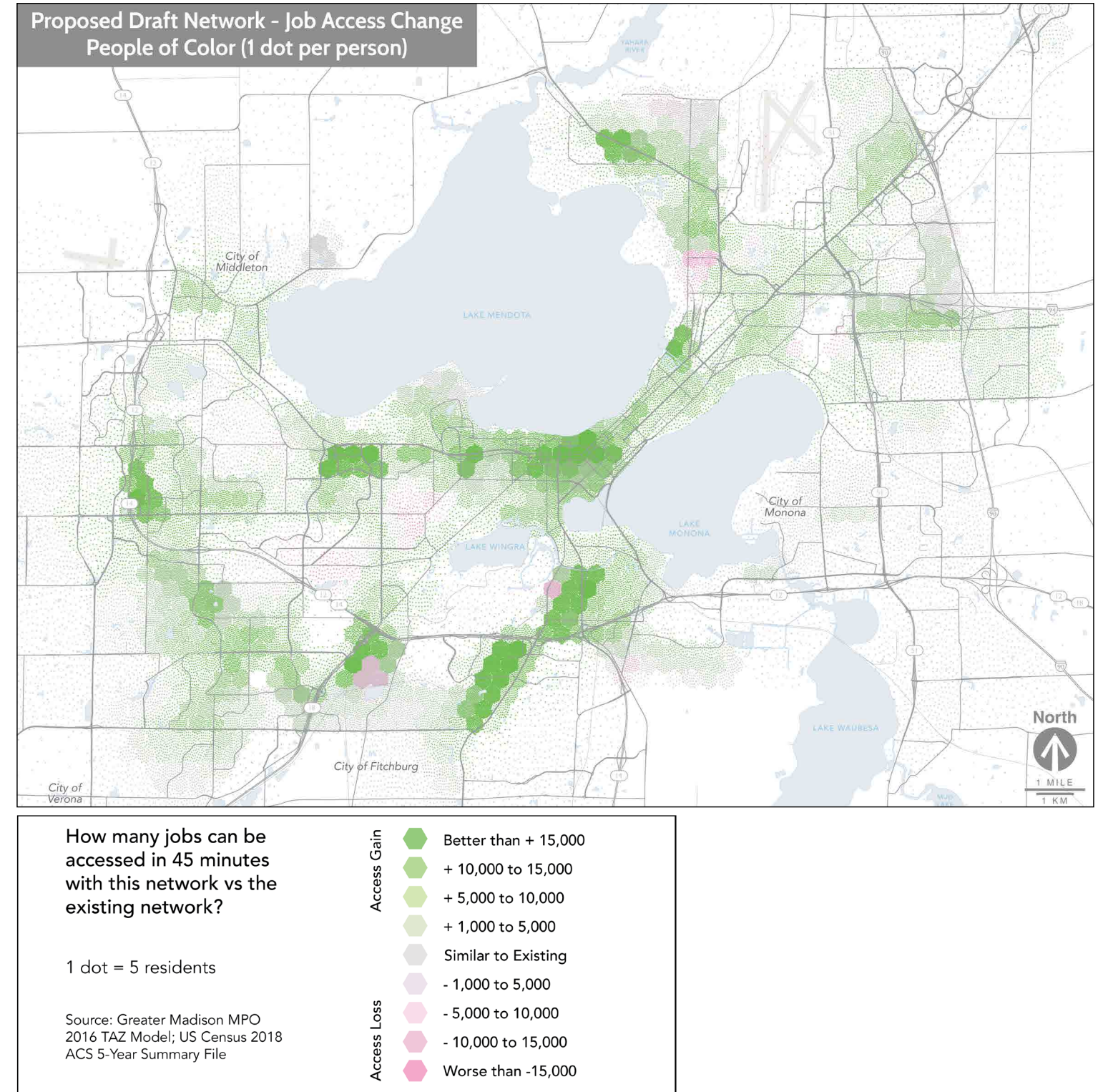


Figure 22: Proposed Draft Network 45-minute Job Access Change by Residents with Low Income

Change in Job Access - People with Low Incomes

On the map at right, each dot represents one person in a low-income household. The color of each dot represents the change in the number of jobs accessible from each location within 45 minutes by transit. As in prior maps, **green** represents increased access and **pink** represents losses in job access.

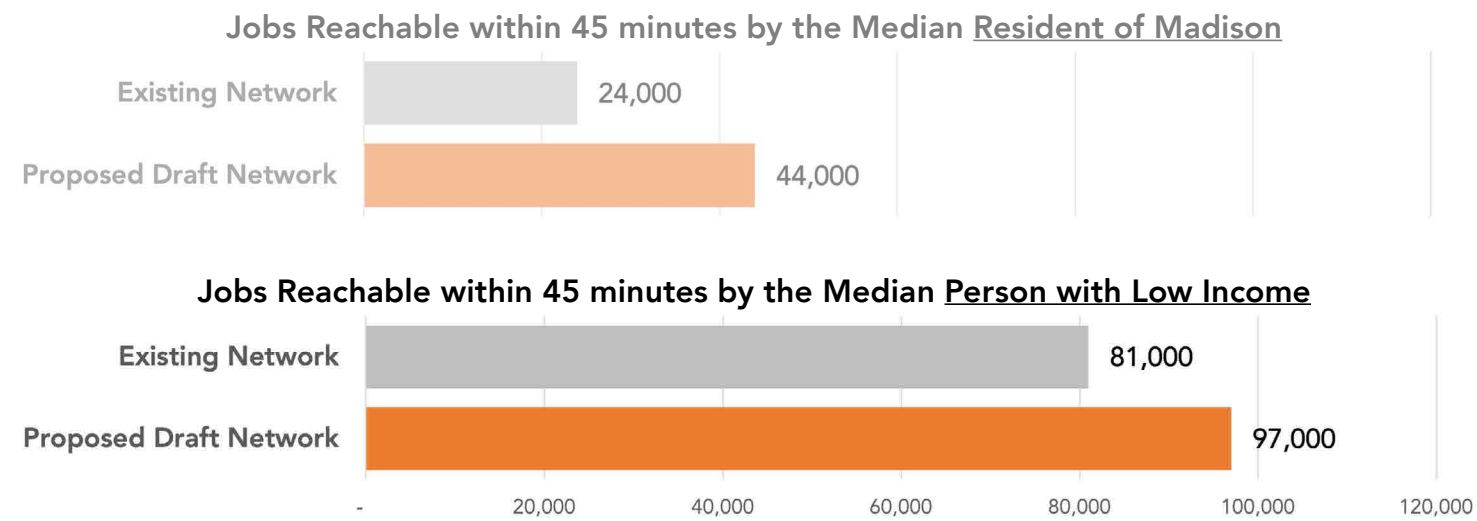
Many people with low-incomes live in central Madison, where job access is already high on average, so in percentage terms they would benefit less from any changes to the transit network. But in absolute terms, people with low incomes would benefit from improvements in job access by transit at similar rates to the population as a whole with the Proposed Draft Plan.

With the Proposed Draft Network, the median low-income person could reach 97,000 jobs within 45 minutes by transit and walking, a 20% increase.

As can be seen by the color distribution on the map, this improvement would be near-universal among people with low incomes:

95% of low-income people in Madison live where job access in 45 minutes would increase by at least +1,000 jobs vs. 89% of all Madison residents.

76% of low-income people in Madison live where job access in 45 minutes would increase by at least +10,000 jobs vs. 59% of all Madison residents.



In access terms, people with low incomes would benefit from improvements in job access by transit at similar rates to the general population.

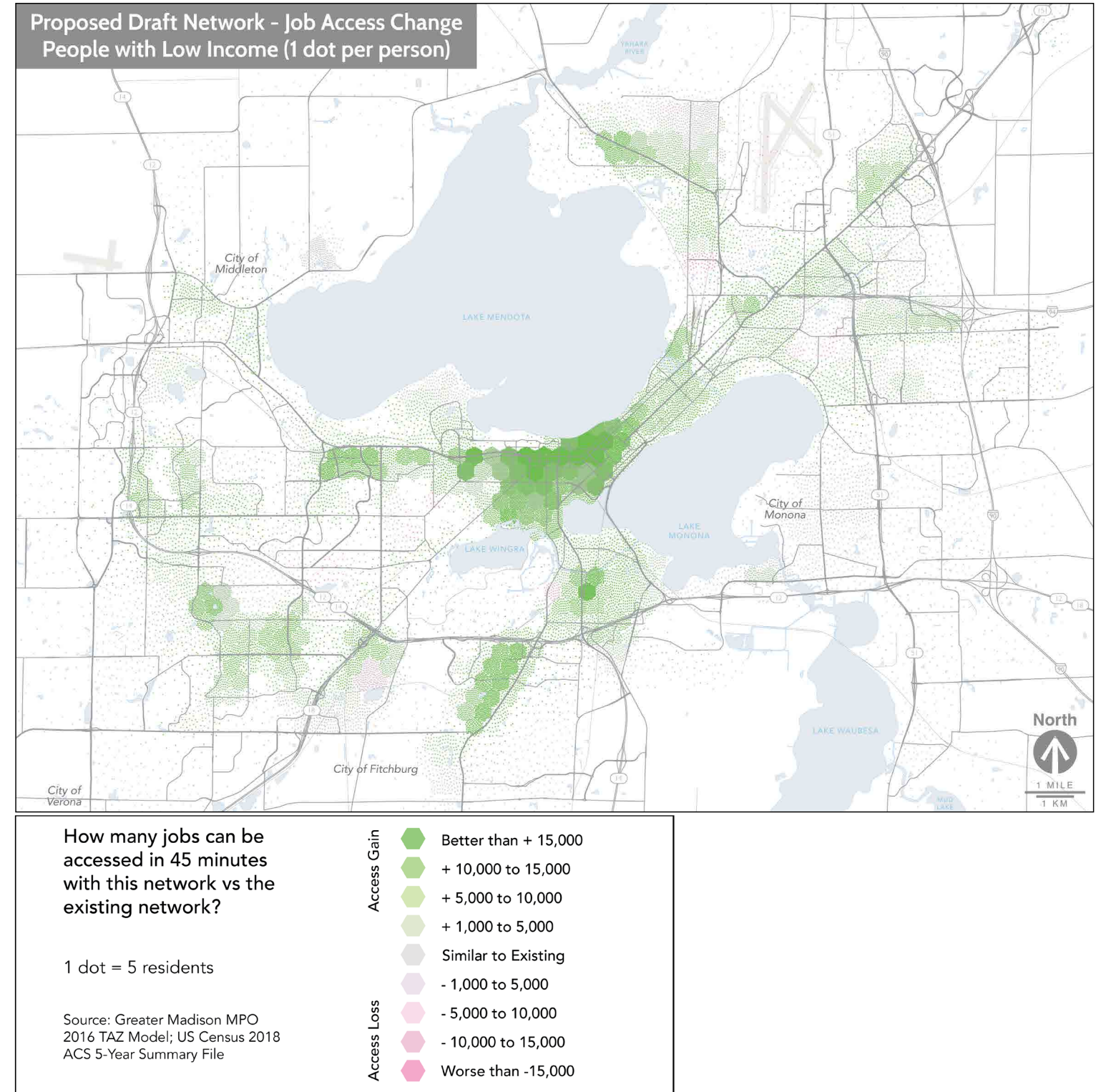


Figure 23: Proposed Draft Plan 45-minute Job Access Change by Residents with Low Income

5 Conclusion and Next Steps

Summary of Key Outcomes

1. Transit service would become much more simple and useful to the average person in the Madison Area.

- The number of people living within a 1/4-mile of frequent service (every 15 minutes or better) would nearly quadruple. Frequency correlates strongly with improved usefulness and higher ridership, especially when frequent services are combined into a connected network.
- As a result, more people would be able to reach more opportunities in a given amount of time. **The average Madisonian could reach about 21,000 more jobs (+80%) in 45 minutes by transit than they could today.**
- Simplicity can help attract spontaneous and new riders. The number of lines goes from 47 in existing service to 18 in the Draft Network, and **the vast majority of people and jobs would be located along just 8 routes** (A to H). Fewer lines mean a network is easier to remember, and more frequent lines with more consistent spans make trip-planning easier.
- Other factors would affect whether or not people choose to ride, such as fares, parking prices, gas prices, employment levels, the lingering effects of the pandemic etc. Holding these factors constant, however, when more people can make more of their trips faster, by transit, more people will choose to ride and fewer will travel by car.

2. Some areas would be farther from all-day transit service.

- The percentage of Madison residents within 1/4-mile of service every 60 minutes or better, all day long, seven days a week, would decrease from 79% to 73%.
- For most people, the increased distance to bus stops would be small. The walk distance to the nearest bus stop would increase by about 300 feet for the median Madison resident, or about one block.
- Nonetheless, some areas would continue to be covered only at peak hours. These are typically (but not exclusively) areas with lower population densities and above-average incomes.

3. People of color and people with low incomes would benefit at similar rates to the population in general.

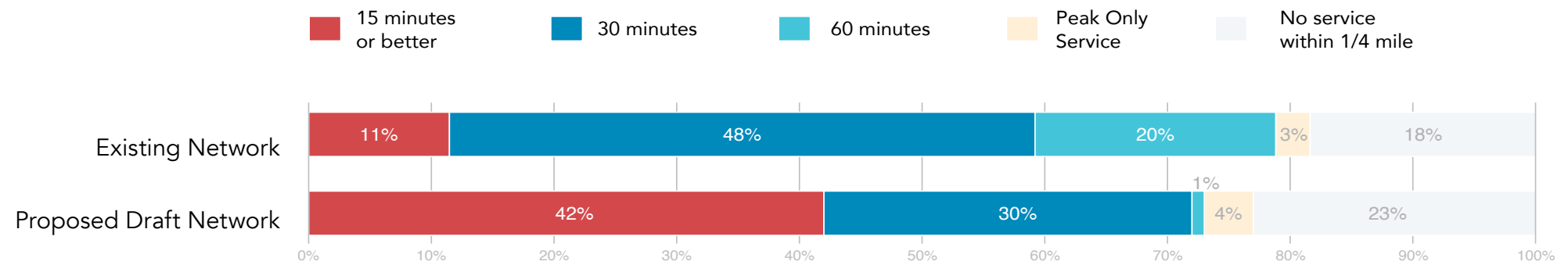
- The project team paid special attention to the needs of marginalized communities, in particular low-income people of color who disproportionately live in peripheral neighborhoods.
- As a result, the average changes in job access and network coverage for people of color and people of low incomes are similar. In addition, as pointed out on the following page, a higher percentage of people of color and people in poverty would see increases in job access by transit than for the population in general.

4. The City of Madison and other communities served by Metro could encourage transit-oriented development, including affordable housing, in more places.

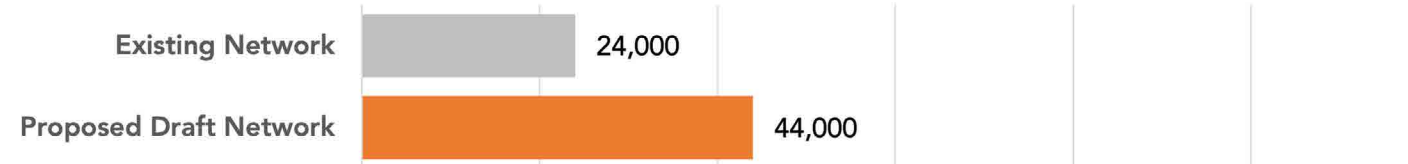
- Dense developments and the neighborhoods around them benefit from frequent transit service, and some cities have policies allowing more density, less parking, and greater affordability around frequent bus lines.
- The Draft Network's lines A, B, C and D would all operate every 15 minutes or better on weekdays. These frequent services would make the development of new housing and services along them more attractive.
- Line F to Middleton would potentially enable transit-oriented densification, especially if upgraded to run every 15 minutes in the future.

Residents near Transit

Percentage of the Residents of Madison within 1/4 mi of a bus stop with service every...



Jobs Reachable within 45 minutes by the Median Resident of Madison



Next Steps

Project Timeline

This report is the third major report in the Metro Transit Network Redesign and kicks off the third round of public involvement. As described in Figure 24, this will include another public survey, as well as a variety of efforts to meet the public virtually and in-person.

The next steps in the redesign process are the following:

- **Winter/Spring 2022: Public Review of Draft Plan.** The public will provide feedback on the Draft Plan to Metro Transit. Taking into account public feedback, the TPPB will direct the project team on any changes to make to develop the Final Plan.
- **Spring/Summer 2022: Final Plan.** Depending on the amount of change, it could take more or less time to finalize and implement the network redesign.
- The City is targeting **full implementation for the summer of 2023.**



Figure 24: Timeline for the first three phases of the Transit Network Redesign. The Final Plan will be developed in the first half of 2022. The redesigned network may be implemented in 2023.

Let us know what you think!

Take the online survey at:
mymetrobus.com/redesign

Appendix A: Additional Analysis on Proximity to Transit

Appendix B: Phase 2 Community Engagement Report

Appendix C: Travel Time Maps
