Reimagine Transit

Suffolk County Mobility

Draft New Network Report

FEBRUARY 2022

For Suffolk County

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1 Introduction

What Is Reimagine Transit?

Reimagine Transit is a Suffolk County initiative to rethink and reconsider the Suffolk County Transit (SCT) bus network and consider how its transit system is meeting the County's mobility needs. A bus network redesign is a collaborative planning effort to decide where today's bus service should go, when it should run, and how frequently it should operate, starting from a clean slate.

This project is a collaboration between Suffolk County Departments of Economic Development and Planning and Public Works and will engage riders, the general public, and key Stakeholders in conversation about how the County's bus network should serve its residents, businesses, and visitors.

Why redesign the bus network?

Redesigning SCT's bus network is an opportunity to review existing and potential transit demand and need, and to design a network that meets those demands and needs most effectively.

An outdated system

Some SCT bus routes have been running the same paths since SCT took over management of transit services in 1980, and many of these route patterns were run for decades before that by private operators. The urban and suburban areas of Suffolk County have grown and changed enormously and the places people go for work, recreation, socializing, and other purposes have changed. If the County's growth and development has changed dramatically, then it stands to reason that its bus network should as well.

Declining ridership

In the past ten years, ridership on SCT's fixed route services has declined by about 25%. Most U.S. transit agencies have seen declining transit ridership over the past decade. The exceptions are those cities where transit service has been increased or redesigned.

One of the biggest drivers of ridership gains or losses is how much service is provided. But even considering the amount of service provided, SCT's ridership relative to service has slowly declined for fixed route service since 2011.

Time to reevaluate goals

High ridership is just one goal that a transit network can achieve. Transit serves other values besides high ridership which can lead to economic, environmental, social, health and personal liberty goals.

A complete, blank-slate redesign allows Suffolk County to ask the public: How can the transit network best serve peoples' values today?

The Draft New Network introduced in this report is designed to spend a greater share of the budget on high-ridership services, to make the network more useful to a larger number of people, incorporating the public feedback and preferences received from the public survey..

How is the Draft New Network different?

The Draft New Network is extremely different from the Existing Network in many big and small ways. Nearly every route is changed.

A blank slate and a larger budget to solve reliability

The Draft New Bus Network was drawn from a blank slate. Some routes are similar to the routes running today, but there are proposed changes to nearly every single route in the system.

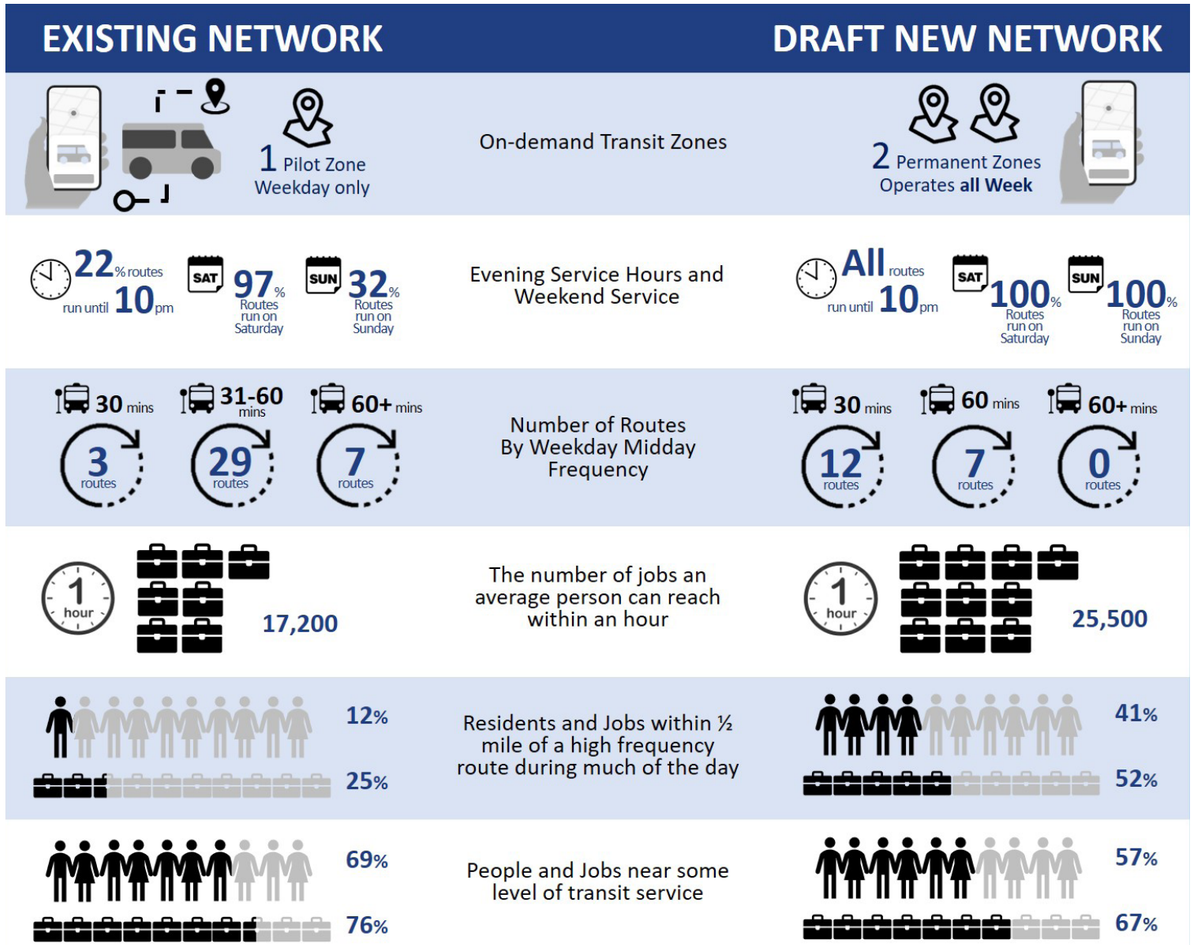
The Draft New Network does include a larger budget for more service, but most of that additional budget is used to ensure that buses run more reliably on-time. Today's Existing Network has very poor reliability: the average route is on-time only about 40% of the time. This poor reliability is due to schedules that have not been updated in many years, and therefore are not accounting for changes in traffic patterns. Improving reliability to a more reasonable level requires an investment of at least 15% in additional fixed route service to account for slower speeds. An additional 5% investment in fixed route service is included in the Draft New Network to provide more consistent service on the evenings and weekends. Fixed route services comprise roughly 45% of the County's total Transit budget, so this would mean a 9-10% increase in the overall Transit budget.

Less spent on coverage, more spent on ridership

The biggest difference, and the change that drives all of the other differences, is that the Draft New Network focuses more of SCT's bus service in the places and the routes where the most people ride.

Within a limited budget, any transit agency must balance these competing goals: focusing service into frequent routes that serve more riders, or spreading service out so that minimal service covers a large area. For more about this trade-off, see the Choices and Concepts Report.

Figure 1: Summary of the major differences in outcomes between the Existing and the Draft New Network



Whether Suffolk County should make that trade-off differently in the future was one question this effort has posed. In consideration of public and stakeholder input and the challenges of declining ridership, the County decided to make a shift to a network that puts more useful, high frequency service within reach of more people across the County.

In the existing bus network, about 50% of the budget is spent on routes that attract high ridership relative to cost; the other 50% is spent on routes with low ridership relative to cost. With the Draft New Network, the County proposes to spend 65% of the bus budget on high ridership services, reducing spending on low ridership services.

Better frequencies and longer hours

Shifting budget away from covering small numbers of people, and towards higher ridership, means most existing riders would get better service. The Draft New Network includes better frequencies, longer hours of service, and more weekend service, in the places where many people live and work, and where many people already ride today.

More direct routes

Routes designed for high ridership go straight, rather than deviating or wiggling, because the majority of riders want to go straight to major destinations. In the Draft New Network, routes are straighter, only deviating if there is someplace off the main road that large numbers of people travel to.

Some coverage provided with On-Demand transit

To cover places where ridership is low, SCT can use a flexible service rather than a scheduled transit route. This service is called "On-Demand Transit" and it is currently being piloted in the Southampton area. Because of its low cost to provide in low-ridership areas, it is a useful coverage tool. The Draft New Network includes an additional "on-demand" zone in the South Fork.

Timed connections for faster trips

Today, when connecting between SCT routes at transit hubs like Smith Haven Mall, riders may have a long wait because the frequency of service is poor. Also, connections between routes are not timed to meet at the same time, or if they are timed, reliability is so poor that buses rarely arrive at the same time.

In the Draft New Network there are several locations with these timed connections between routes: buses from different routes meet at the same time each hour or half-hour. In these centers, nearly every route connects with every other route, so people can make a quick transfer in either direction.

The result is good for many other towns and places around the County because it means **people can travel through major transit centers to jobs and destinations beyond, with less waiting.**

The Draft New Network

The Existing Network uses 50% of resources towards service that can achieve high ridership and the remaining 50% is spent on coverage goals and duplicative service. When showing contrasting Network Concepts to the public, we designed the Coverage Concept with 40% of its resources towards ridership-oriented service, and 60% towards coverage-oriented service. For the Ridership Concept, this proportion was 70% ridership to 30% coverage.

Based on the public feedback as described on page 14, the Draft New Network has been designed to follow these guidelines:

- 65% of fixed route transit resources are to be used to provide service that will achieve higher ridership relative to cost.
- The remaining 35% will go to service that is not likely to get high ridership, but will provide transit coverage in areas where it is needed to reach low-income populations or other key destinations in the County.

This means that the Draft New Network is very similar to the Ridership Concept, but with some of its service used for coverage goals instead of ridership goals.

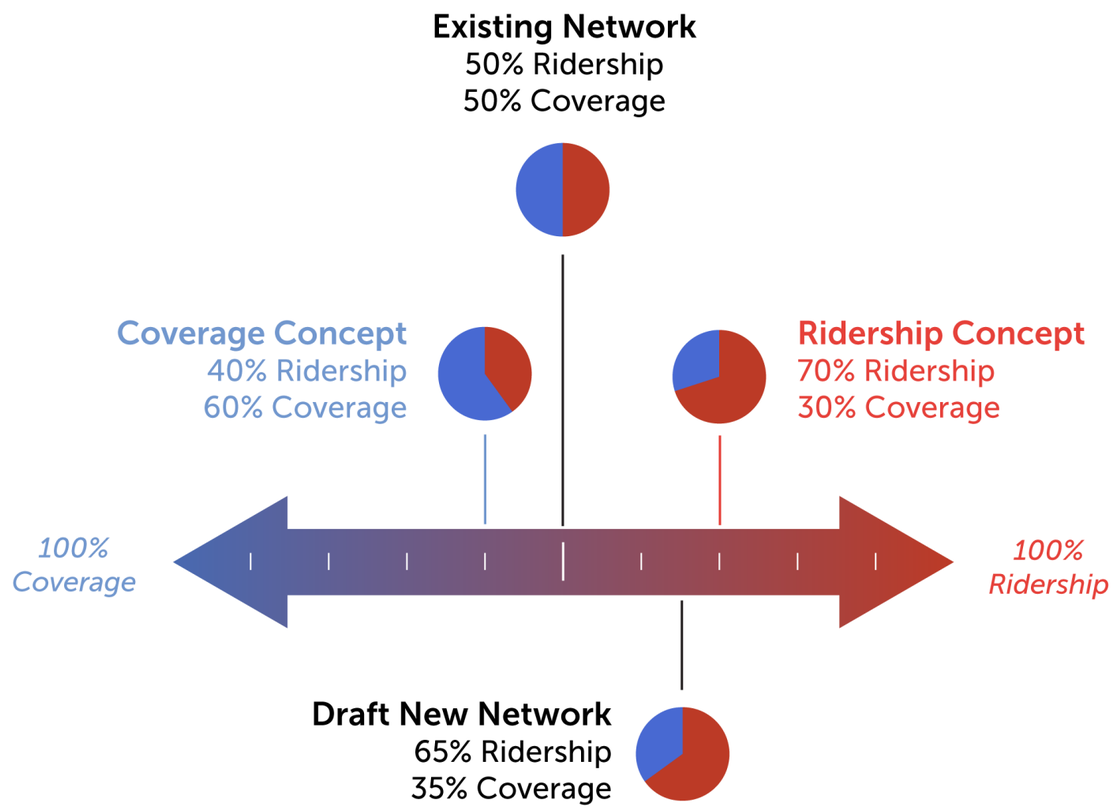


Figure 2: In the Draft New Network, 65% of resources are used for ridership-oriented service, and the remaining 35% is used for coverage-oriented service. It is hence significantly different from the Existing Network, and is similar to the Ridership Concept.

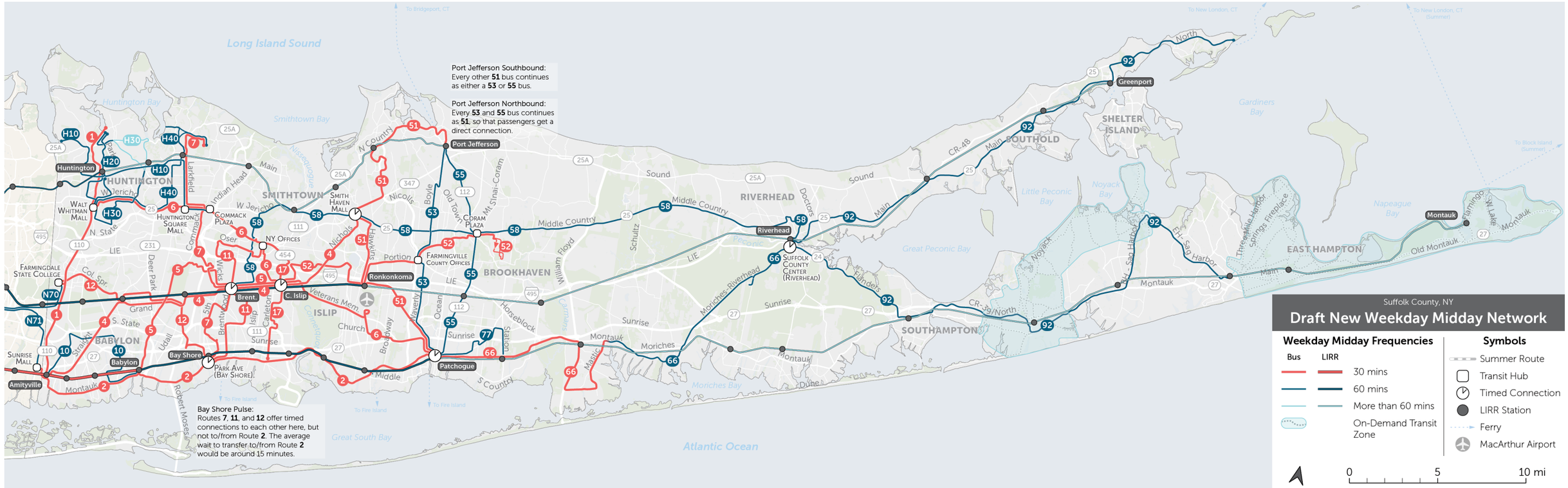


Figure 3: Map of the SCT Draft New Network Colored by Frequency at Midday on Weekdays

The map in Figure 3 shows the network for the whole County[1].

In the network maps, colors make all the difference:

- **Red lines** represent routes that operate every 30 minutes or better;
- **Dark blue lines** run every 60 minutes;
- **Light blue lines** run less often than every 60 minutes; and
- **Light blue areas** represent on-demand transit zones.

Compared to the Existing Network, there are many more routes which run every 30 minutes during most of the day on weekdays (as can be seen in the larger number of **red** lines), but fewer unique routes overall, since transit service is consolidated to provide higher frequency. All routes offer at least 60-minute frequency (there are no **light blue lines**). These routes run later into the evening, and all routes run on Sunday.

In addition to the improved frequency of service on many corridors, the Draft New Network includes timed connections at key points in the network where many routes converge:

- Bay Shore on Park Avenue where routes 7, 11, and 12 would be timed to meet.
- Brentwood LIRR Station where Routes 4, 5, 7, 11, and 58 would be timed to meet.
- Central Islip LIRR Station where Routes 4, 5, 6, 17, and 52 would be timed to meet.
- Smith Haven Mall where Routes 4, 51, and 58 would be timed to meet.
- Patchogue where Routes 2, 6, 51, 53, 55, 77, and 66 would be timed to meet.
- Riverhead at the Suffolk County Center where Routes 58, 66, and 92 would be timed to meet.

The Draft New Network is described in detail in Chapter 3 starting on page 16. Detailed maps of the western and eastern parts of the County are also included in that chapter.

1 Note that HART routes (shown with the prefix "H" on the maps) and NICE routes (shown with the prefix "N" on the maps) are not part of the SCT network, and will not change in the Draft New Network.

Change in Access in the Draft New Network

The Draft New Network is designed to **increase access substantially** compared to the SCT Existing Network. Places where people want to go for opportunities other than work - like shopping, education, and medical needs - also have a lot of jobs. Hence we measure access to jobs since it also corresponds to other opportunities. On average, in the Draft New Network:

- Overall, residents in the County can access 48% more jobs within 60 minutes by transit,
- Low-income Residents can access 59% more jobs,
- Residents Without Cars can access 53% more jobs, and
- Residents of Color can access 67% more jobs.

Figure 4 shows this 60-minute job access change in the Draft New Network.

How is this achieved?

The Draft New Network is very different from the Existing Network, and achieves high increases in access to jobs and opportunities because:

- It provides **better frequency** in the places **where most people will benefit** from it. People have to wait less to catch a bus, and can thus travel farther and reach more opportunities in a given amount of time, and
- It offers **timed connections across the County.** In the map on the previous page, they are shown as clock-face icons. This means that in many places, people can transfer between routes with a short waiting time, and can thus reach more places. Schedules will be updated to reflect actual driving conditions to increase reliability.

With the Draft New Network, the average Resident could reach 48% more jobs and opportunities in 60 minutes by transit.

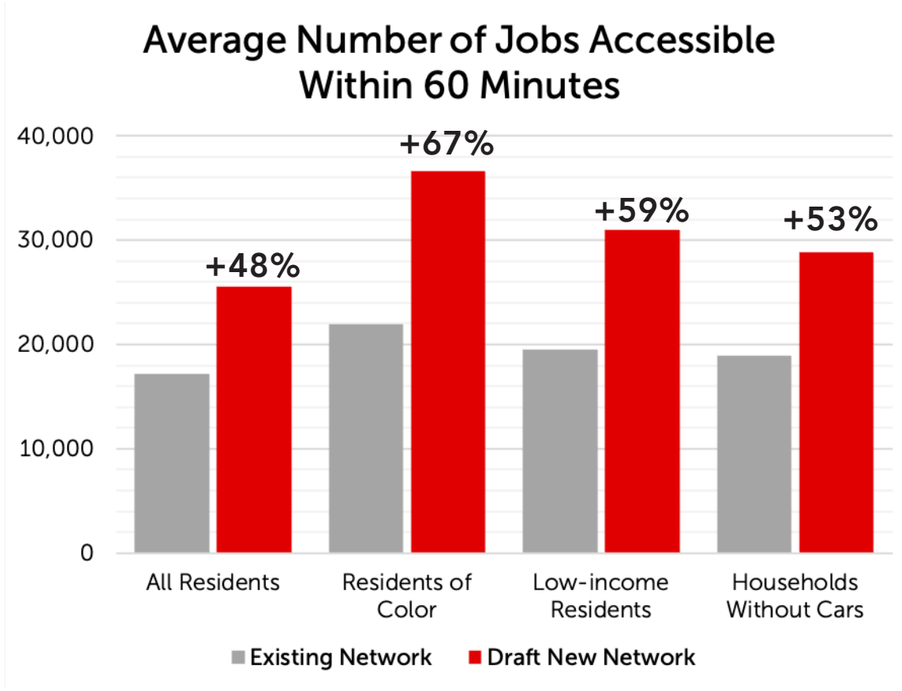


Figure 4: Average 60-Minute Job Access for Residents, Minority Residents, Low-Income Residents, and Residents Without Cars for the Existing Network and the Draft New Network

Change in Proximity to Transit Service

The number of people and jobs within a certain distance from transit is the simplest measure of transit outcomes. In this report we call this measure **proximity to transit.**

Figure 6 shows how many Residents, Low-income Residents, Households Without Cars, Residents of Color, and Jobs in the County would be within 1/2 mile of transit service in the Draft New Network. Figure 5 shows this same information for the Existing Network.

In these figures, the **red bars** show the proportion of each group near transit that is every 30 minutes or better during the middle of the day on weekdays. **Dark blue bars** show the proportion of each group near service worse than every 30 minutes and up to every 60 minutes, **light blue bars** show the proportion near some other level or type of transit service. Meanwhile **gray** bars show the proportion of each group that are not near any fixed route transit service.

The Draft New Network would significantly increase the number of people and jobs **near frequent service,** as more routes would be running every 30 minutes. Compared to Existing, the Draft New Network would:

- Increase Residents near frequent service from 12% to 41%,
- Increase Low-income Residents near frequent service from 14% to 48%,
- Increase Households Without Cars near frequent service from 16% to 46%,
- Increase Residents of Color near frequent service from 13% to 55%, and
- Increase percent of Jobs near frequent service from 25% to 52%.

A key feature of the Draft New Network is that it expands the proportion of Low-income Residents, Households Without Cars, and Residents of Color near frequent service more so than it does for the County's Residents overall. However, these increases in proximity to frequent service do come with a trade-off. A certain percentage of residents and jobs would be more than 1/2 mile from any transit service.

The Draft New Network more than triples the number of Residents near 30-minute bus service and more than doubles the number of Jobs near 30-minute service.

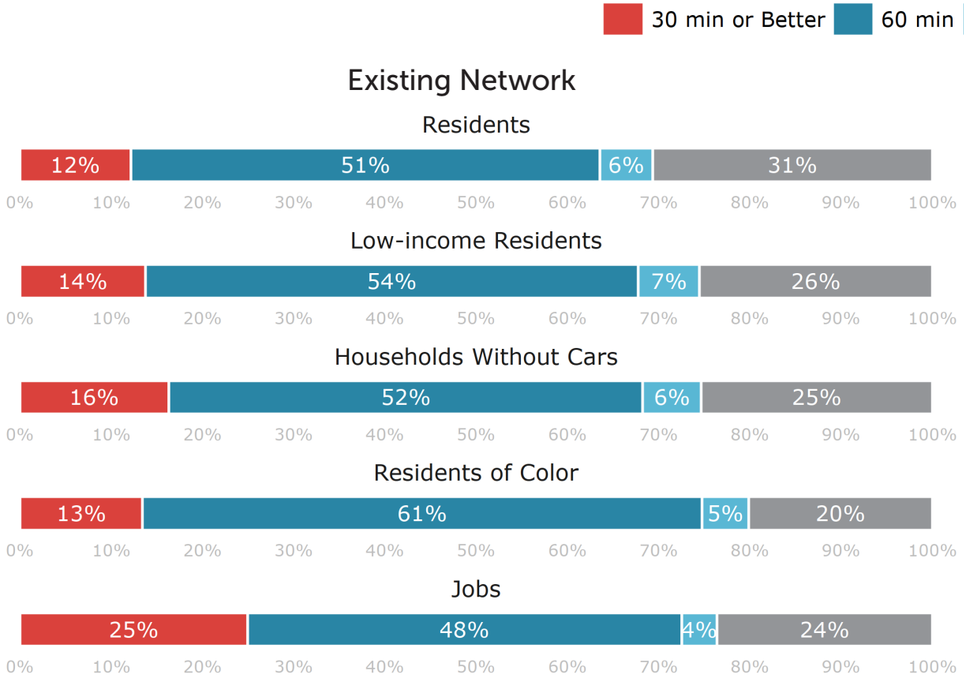


Figure 5: Proximity to Transit Service in the Existing Network

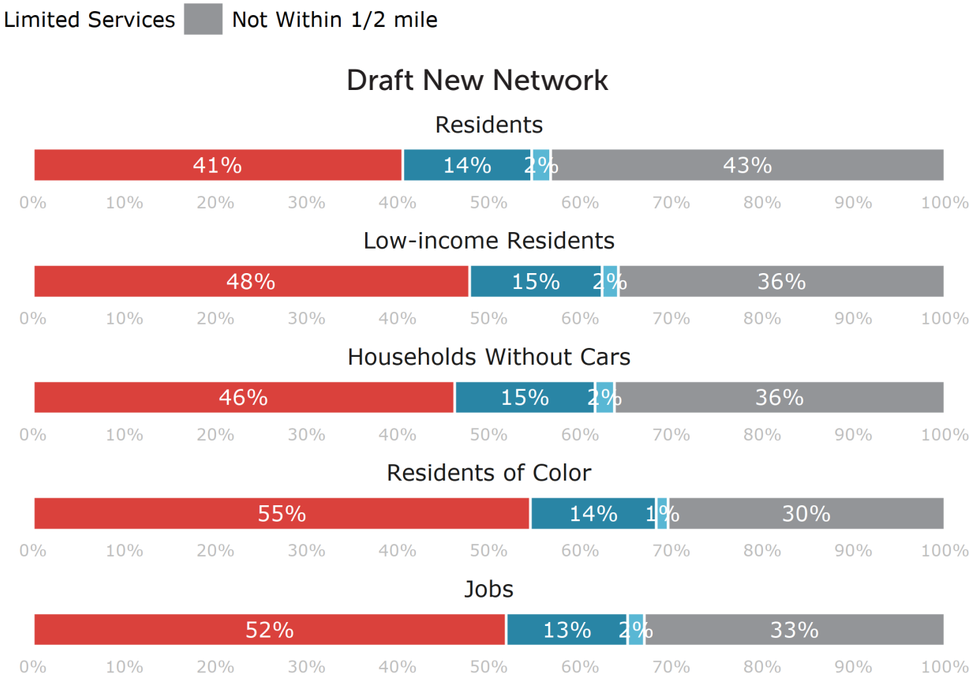


Figure 6: Proximity to Transit Service in the Draft New Network

What Else Is in This Report?

How We Got Here

In Chapter 2, we recap some highlights of the Choices and Concepts Report, published in April 2021, and a summary of the public engagement response that has led to the design of the Draft New Network.

Detailed Description of the Draft New Network

In Chapter 3, we describe the Draft New Network in detail. We lay out the key features which make this network different from the Existing Network, and then provide a detailed description of the Draft New Network layout in the Western and Eastern parts of Suffolk County. We then describe the hours of service across the week.

Change in Outcomes: Access and Proximity

Elements of the service like frequency and span tell us a great deal about how useful transit is, but they do not tell us everything about how service interacts with where jobs, people, and destinations are in Suffolk County. **In Chapter 4,** we discuss in detail two important outcomes of the Draft New Network compared to the Existing Network: access to jobs, and proximity to transit.

Next Steps

This is a draft network, and Suffolk County is collecting feedback in response to it. Once that feedback has been gathered and considered, the County will finalize the New Bus Network in Summer 2022.

That Final New Bus Network is expected to be implemented in early 2023.

Learn more about the project, the Draft New Network, and future public meetings at connectli.org/ReimagineTransit.html.

Give input by taking the project survey, participating in a public meeting, or send an email to ecodev@suffolkcountyny.gov.

PHASE 1

Network Concepts

SPRING AND SUMMER 2021

After evaluating the Existing Transit Network, Suffolk County staff and the consulting team designed a pair of contrasting Network Concepts to illustrate key choices.

Transit riders, stakeholders, employers, workers and community leaders were consulted on how Suffolk County should make major choices in the redesign of the network.

PHASE 2

Draft New Network

WINTER AND SPRING 2021-2022

The Draft New Network Plan has been designed by Suffolk County staff and the consulting team, according to County direction and with consideration of public input from Phase 1.

Public input will be gathered on this Draft New Network through February 2022.

PHASE 3

Final New Network

SUMMER 2022

Based on input from the public in Phase 2, a Final New Network Plan will be created in Summer 2022.

The Final New Network is expected to be implemented in early 2023.

2 How We Got Here

Key Choices

Reimagine Transit: Suffolk County Mobility Implementation Plan kicked off public engagement with the Choices and Concepts Report, published in April 2021. In that report, we analyzed the existing system, existing demographics, needs, markets, and demand for transit in the County.

The map below shows the Existing Bus Network in Suffolk County. A zoomed-in map of the network in the western part of the County is in the Appendix on page 38. In every network map in this report, every route is color-coded based on its frequency during the midday on a weekday.

In this map and all other network maps in this report, colors are used to represent frequency:

Darker colors represent routes which run more frequently. **Red** represents routes running every 30 minutes or better, the **dark blue** represents headways of 31-60 minutes, while the **light blue** routes run on frequencies less than every hour.

The Southampton On-Demand Transit Zone Pilot is shown as a **light blue area**. In On-Demand Zones, passengers can request a pickup with a wait time of 30 to 45 minutes to travel within the zone.

Currently, every fixed route in Suffolk operates at best every 30 minutes at midday.

In this map, the three prominent red lines are the S1, S40, and S54. These run along relatively direct corridors in areas that are relatively dense in terms of population or jobs. Most of the rest of the SCT network runs every 40-60 minutes at midday. Some routes run on frequencies worse than every hour, along with some deviations of more frequent routes.

Because transit service is spread out in order to cover the County's large geographical area, 70% of residents and 76% of jobs are within 1/2 mile of transit service. However, only 12% of residents and 25% of jobs are near the relatively frequent routes that come every 30 minutes.

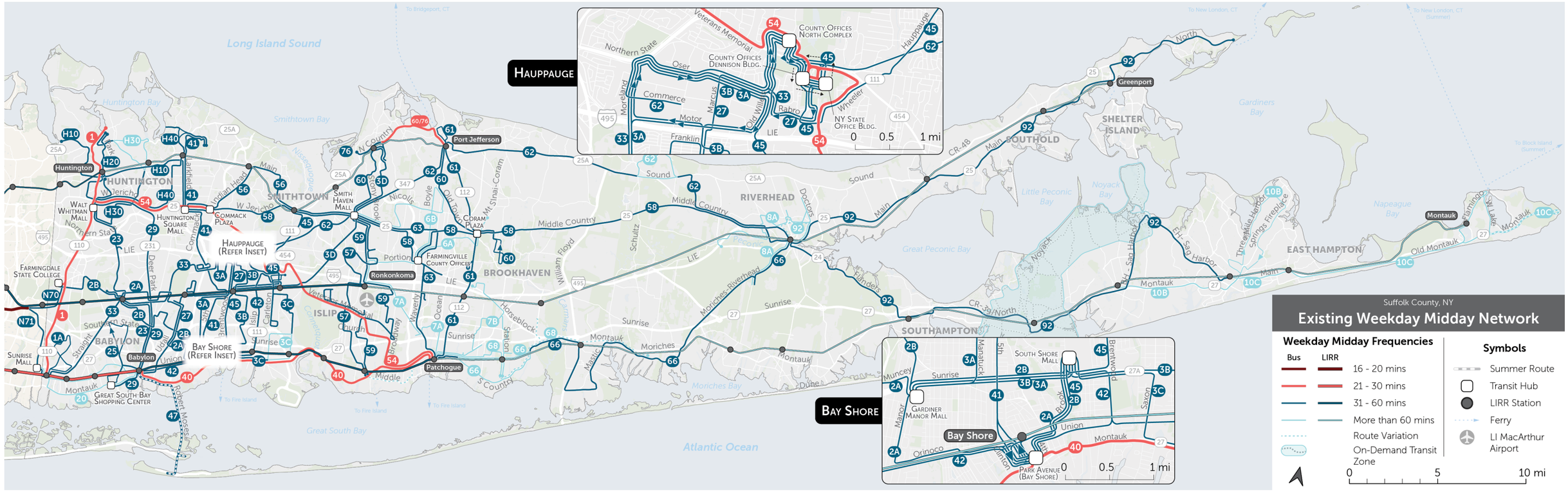


Figure 7: Map of the Existing SCT Network Colored by Frequency at Midday on Weekdays

What Is the Product of Transit?

Public transit can achieve many goals, but a commonly held goal for transit is to help people **access** opportunities: work, shopping, medical needs, education, and all the economic, social, cultural, and natural riches that a community has. Everyone has a limited amount of time in their day and, therefore, can only spend so much time traveling to meet their needs. Maximizing the people and places that people can reach in a limited amount of time is something we can calculate in assessing how well transit is meeting this goal. Figure 8 on the right shows how we calculate this.

What Access Achieves

When we expand access for as many people as possible, we achieve many important things:

- We **make service more useful** for the trips people are already making and for many other trips that people might want to make by transit. **When transit is more useful, more people use it.**
- We **increase ridership potential**, as a result of service being more useful.
- We increase transit's potential to help with **pollution and congestion**. Ridership is the key to how transit achieves these things, and improving access is the path to ridership.
- We **expand access to opportunity** (jobs, education, shopping, services) for people who need transit for that purpose.
- We **increase the economic attractiveness** of the area. Connecting people with opportunities is the whole point of communities, so improving those connections makes any community more effective.

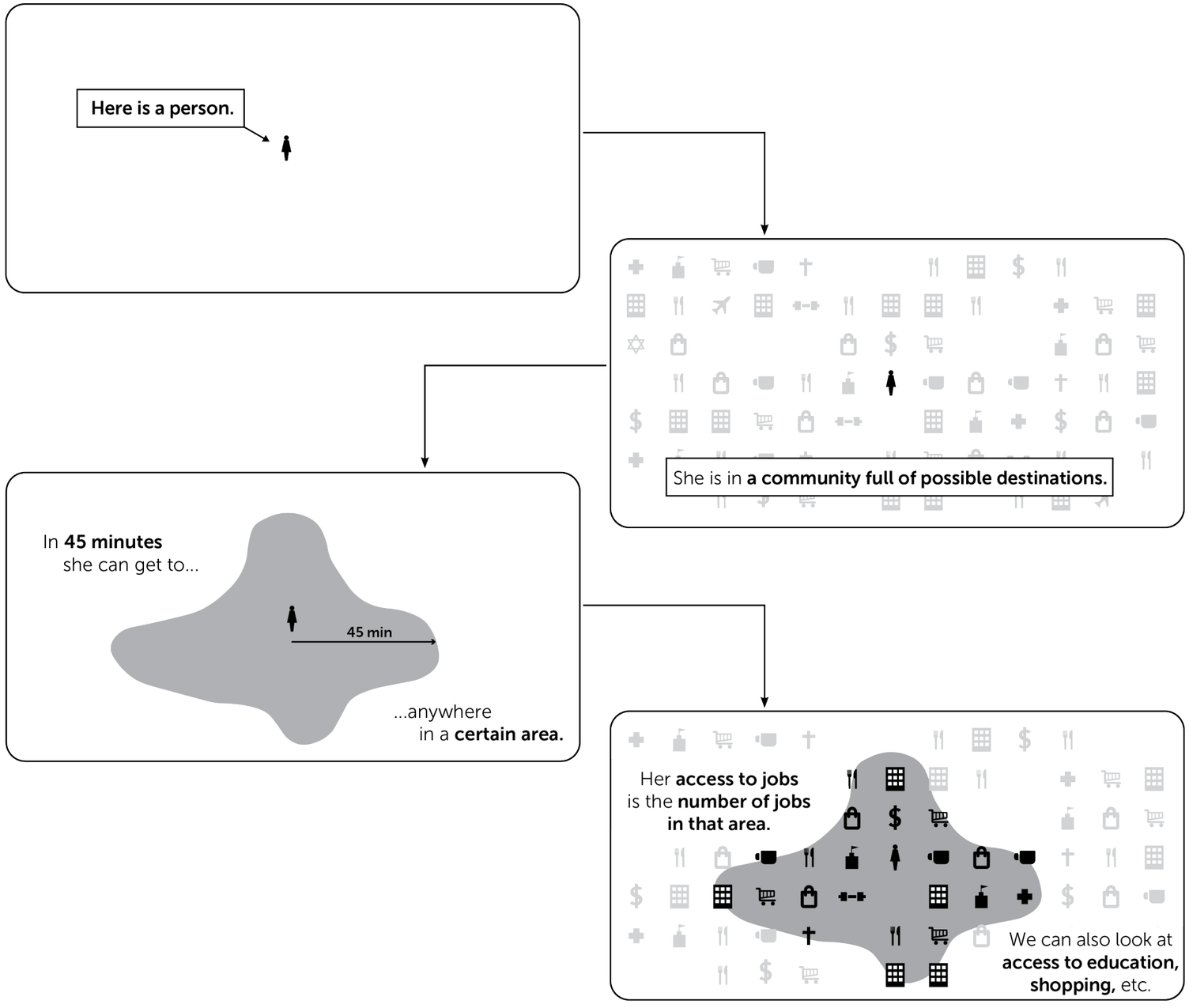


Figure 8: What Is Access to Opportunity?

The Ridership-Coverage Trade-off

Within a limited budget, SCT must make difficult choices between competing goals that people care about. These kinds of decisions should not be the result of a consultant's recommendation. Instead, our role has been to lay out the choices and encourage public discussion of them. Figure 9 on the right illustrates the problem.

A network designed to a ridership goal will maximize access to destinations for the average resident, as this maximizes the chance that transit will be useful for any particular trip. It does this by providing high frequency service in areas where there are many people and jobs to benefit from it. But it does not go everywhere or serve everyone. Some people who need transit will not be served, because they live in **places that are too hard for efficient transit to reach.** These problems are typically in places with:

- **Low Density.** There are few people to benefit from each transit stop.
- **Low Walkability.** It's too hard for many people to walk to the transit stop, which further limits who finds it useful.
- **Poor Linearity.** The street pattern doesn't let the bus run in an efficient straight line.
- **Poor Proximity.** Service must cross a large, low-demand gap to reach a destination.

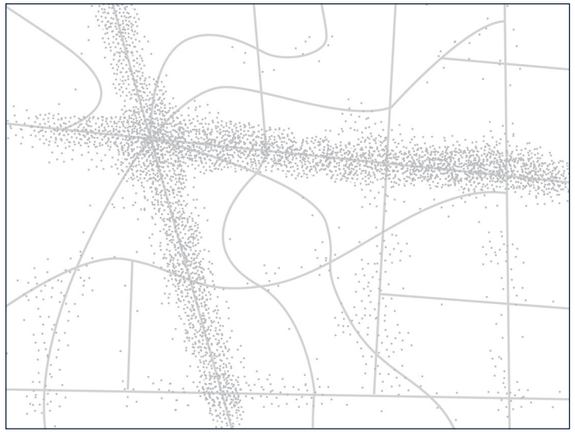
Should transit go to those places anyway, even though they are providing access to few people, and low ridership will be the result?

If so, you want a **coverage** goal. A coverage goal starts with a commitment to going almost everywhere, so that almost everyone has a little service.

Some transit goals are served by focusing on high ridership. For example, the environmental benefits of transit only arise from many people riding the bus rather than driving. Subsidy per rider is lower when ridership is maximized. We call such goals "ridership goals" because they are achieved through high ridership.

Other goals are served by the mere presence of transit. A bus route may provide important lifeline service, even if few people ride it. A route may fulfill political or social obligations, for example by getting service close to every taxpayer or into every political district. We call these types of goals "coverage goals" because they are achieved by covering geographic areas with service, regardless of ridership.

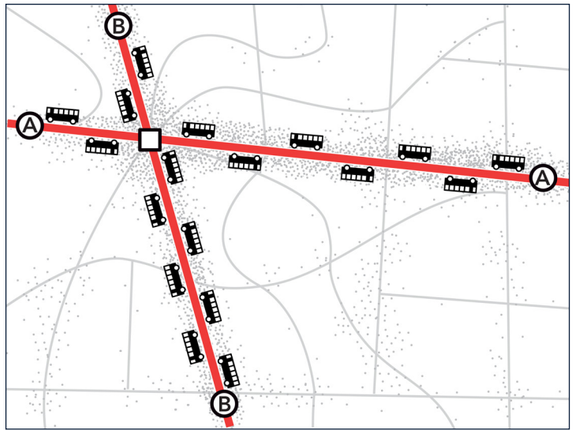
How should we balance these competing goals? Which should be more important? That's the most important question we asked in our public conversation during the first step of Reimagine Transit.



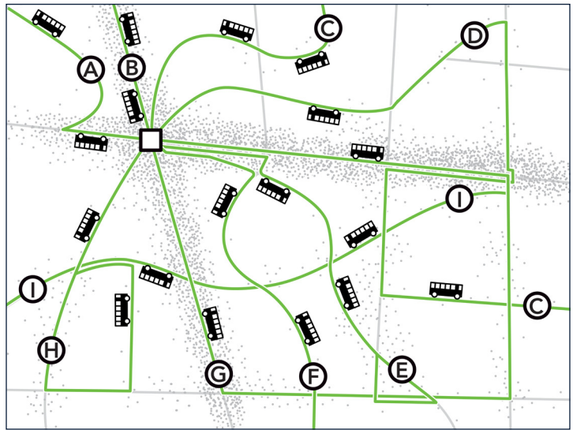
Imagine you are the transit planner for this fictional neighborhood. The dots scattered around the map are people and jobs.

The 18 buses below are the resources the town has to run transit.

Before you can plan transit routes, you must first decide: What is the purpose of your transit system?



All 18 buses are focused on the busiest streets. Waits for service are short but walks to service are longer for people in less populated areas. Frequency and ridership are high but some places have no service.



The 18 buses are spread around so that there is a route on every street. Everyone lives near a stop but every route is infrequent, so waits for service are long. Only a few people can bear to wait so long, so ridership is low.

Figure 9: Within a fixed budget, Ridership Goals and Coverage Goals lead to different network designs.

A Preference For Ridership

A network redesign must fuse knowledge with values. Knowledge includes data about the community and the expertise of transit professionals. Values come only from the community. Reimagine Transit has been engaging with and surveying the community and decision-makers about the values and goals that transit should prioritize. This engagement has been organized into two rounds: Choices and Concepts, and the Draft New Network (where we are now).

Ridership and Coverage Concepts

The consulting team along with key staff from the County's Department of Public Works, Department of Economic Development and Planning, and SCT participated in a multiple-day charrette-style Design Workshop.

In this, the group developed two contrasting Concepts for the SCT network. In one Concept, service was designed to **maximize coverage** of transit service across the County. In the other Concept, transit resources were used to provide frequent service where most people would find it useful and thus this concept was designed to **maximize ridership**.

The maps of the transit network in the two Concepts are shown on the next page. Versions of these maps zoomed in on Western Suffolk are on page 39 and page 40. **For each of the Concepts, we calculated the change in two outcomes to compare the Concepts to each other and to the Existing Network:**

- **Access to jobs** (which also relates to access to other opportunities like schools, hospitals, shops, etc.). This informs how useful a transit network would be to people (which in turn affects the ridership), and
- **Proximity to transit.** This tells us how many people or jobs are near transit, regardless of how useful the network is.

Choices and Concepts Engagement

In the first round of engagement, we released the Choices and Concepts Report which laid out relevant facts about transit and development in Suffolk County, and drew the reader's attention to difficult choices that these facts force us to consider.

During this phase of engagement, the study team:

- Surveyed 501 people online and in person,
- Held two community meetings with 48 attendees (of which 36 responded to polls within the meeting), and
- Presented to the Reimagine Transit stakeholder advisory committee.

During the survey and polling effort, we focused on the key trade-off of Ridership versus Coverage. Using the two Network Concepts developed in the Design Workshop, we asked people if they preferred a network that focused on ridership goals or coverage goals.

Findings from the engagement

Figure 10 shows the distribution of respondents' answers when asked about their preference between the Ridership and the Coverage Concepts in the surveys and meeting polls.

In the online and in-person survey, a majority of respondents (60%) showed a preference for the Ridership Concept, with more than a third (37%) saying they strongly preferred it. Only 20% of respondents showed a preference towards the Coverage Concept. Even when grouped by age, income level, car ownership, and race/ethnicity, more respondents favored the Ridership Concept compared to the Coverage Concept.

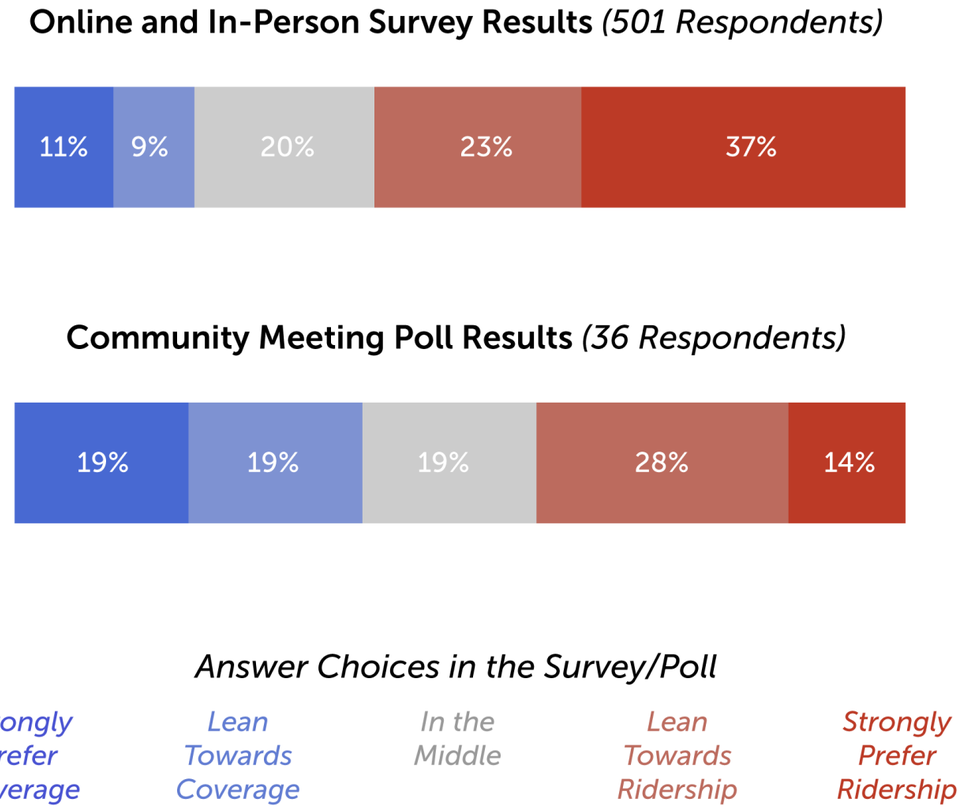


Figure 10: Results From the Engagement for the Ridership-Coverage Trade-off

In the community meetings, the distribution of preference was more even, with 42% of respondents preferring the Ridership Concept, and 39% of respondents preferring the Coverage Concept.

Based on this public input, the County has recommended shifting the balance of the investment in transit toward higher ridership goals and less investment in coverage goals. Therefore the Draft New Network has been designed with approximately 65% of resources devoted to high ridership goals and 35% devoted to high coverage goals.

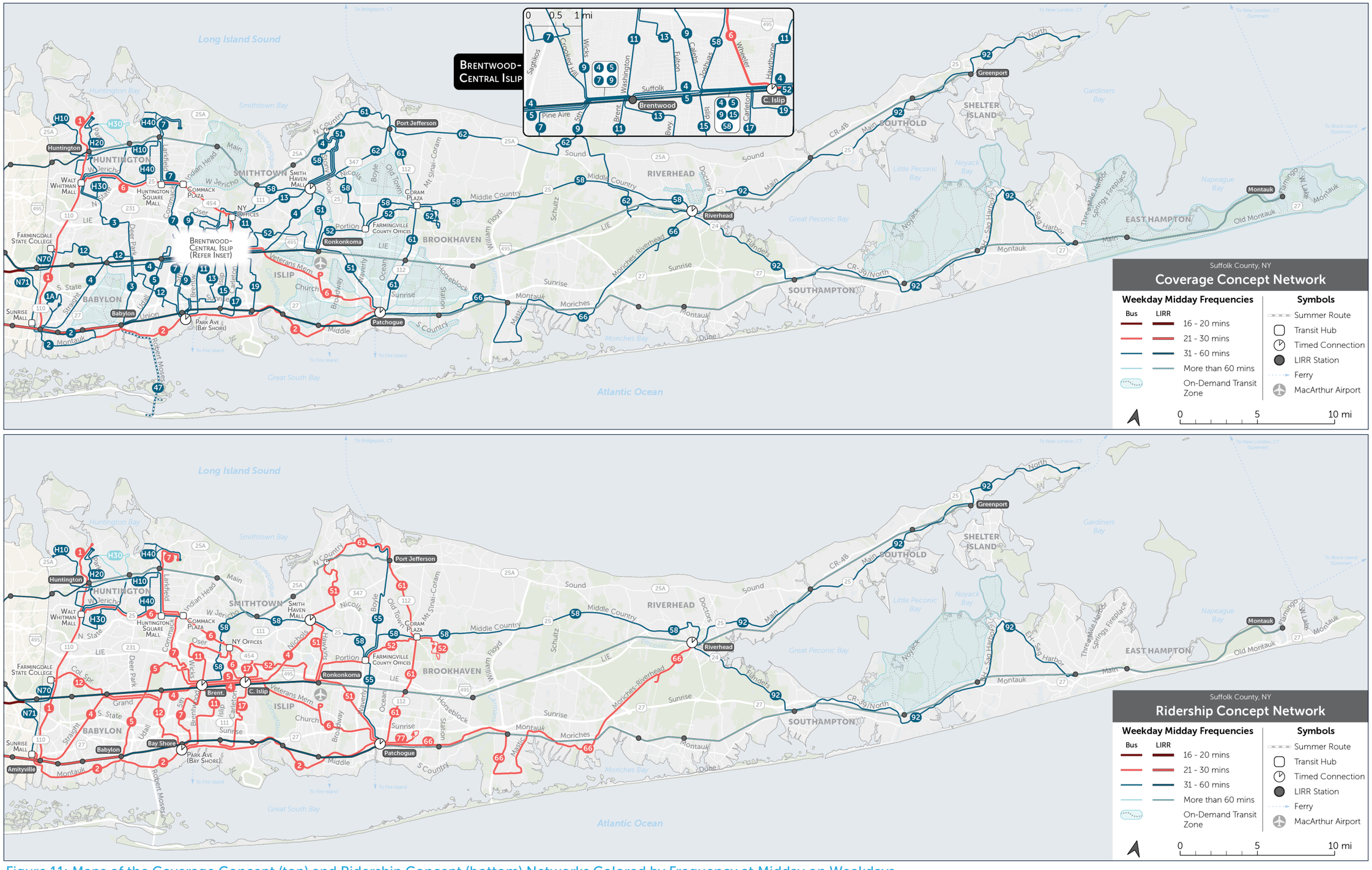


Figure 11: Maps of the Coverage Concept (top) and Ridership Concept (bottom) Networks Colored by Frequency at Midday on Weekdays

3 The Draft New Network

How Is the Draft New Network Different?

The Draft New Network is different from the existing Suffolk County Bus Network in a few significant ways.

A Network Oriented Towards Ridership Goals

The Draft New Network represents a change in how the County's fixed route transit resources are assigned to ridership-oriented goals in contrast to coverage oriented goals. At present, 50% of the SCT's service is used to achieve ridership goals while the remaining 50% is used for coverage goals. In the Draft New Network, this will change to roughly 65% towards ridership goals and 35% towards coverage goals. In practice, this means:

- There will be **more routes which offer 30-minute service** during most of the day on weekdays. The Existing Network has only three routes and another corridor which offers 30-minute frequency during the middle of the day. In the Draft New Network, there will be 12 routes running every 30 minutes.
- There will be **fewer routes** overall. A higher frequency on these many routes is achievable because more of the service will be used to provide frequent service in areas where the most people will find that service useful, instead of spreading it out to cover a larger portion of the County with infrequent routes. In the southwestern parts of the County, nearby parallel routes and overlapping segments of routes will also be consolidated into fewer, more frequent routes.
- Some people would need to **walk farther** to reach a bus route. But they would need to **wait less** to board a bus, because of the increased frequency of service.
- **Routes will run earlier in the morning and later in the night.** At present, many SCT routes do not run before 6 am and after 9 pm. Most routes in the Draft New Network will run from 5 am to 10 pm on weekdays and Saturdays. As a result, there will be more service available for people to travel earlier in the mornings and later in the evenings.
- There will be **significantly more Sunday service.** A large majority of SCT's routes currently do not run on Sunday. For people who work on Sundays or want to travel for shopping, meeting friends or family, or any other purpose, the usefulness of the current system is extremely limited. All routes (except the Suffolk Clipper service, which will not change) in the Draft New Network will run on Sundays every 60 minutes between 6 am and 8 pm.

Timed Connections Across the County

A key feature of the Draft New Network is that at many locations where routes meet each other, there are planned **timed connections** between routes. This would mean that buses from multiple routes would be at the same stop at the same time, so that passengers transferring between their routes would need to spend a very short time waiting, compared to if arrivals were not timed and the routes were meeting randomly.

That is to say, instead of spending 15 minutes on average waiting for a bus which comes every 30 minutes at the transfer point, people would only need to spend around 5 minutes to transfer because buses are timed to meet each other.

Many people in the County will need to wait less to board their first bus (because routes will be more frequent) and then also to transfer (because of timed connections). This combination of reduced waiting time will let people reach more places and opportunities (be it jobs, schools, shops, or medical facilities) in a given amount of time. This is reflected in the substantial increases in the number of jobs accessible by transit, explained in detail starting on page 27.

Better Reliability

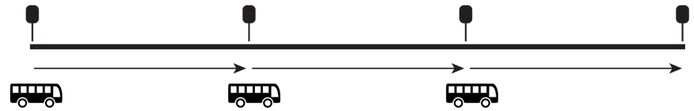
Over the last several years the speed of service on SCT routes has declined because of increased congestion across the County. When the speed of service goes down, one of two things must happen: either the schedules must be updated to reflect the slower speed or the service provided becomes perpetually behind schedule. Figure 12 shows this relationship between speed and reliability. SCT's schedules have not been updated, so most routes today have poor on-time performance.

Good on-time performance and reliability is even more important for timed connections to work properly. If an arriving bus is late and misses the pulse by just a few minutes, that can cause passengers to miss their connection and be 30–60 minutes late to their destinations.

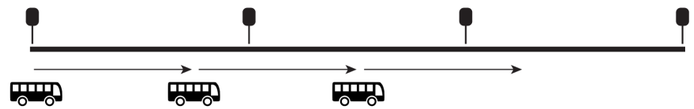
The Draft New Network has roughly **15% more service hours** compared to the existing schedules to account for the slower actual speed, so that resource budgets are in line with actual operations.

Figure 12: The relationship between speed, on-time performance, and the cost of service.

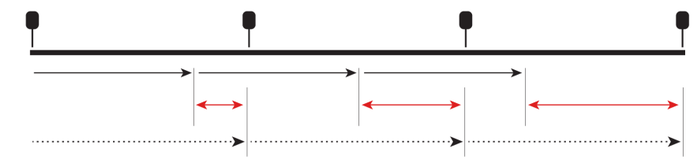
Each arrow represents the distance a bus can travel in 30 minutes. With three buses running, each stop has a bus arriving every 30 minutes.



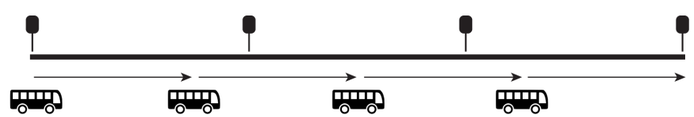
Over time, the actual driving speed goes down. Each bus can cover lesser distance in 30 minutes.



As a result, buses arrive later than the schedule at each stop. This delay is represented by the red arrows.



The agency must add a bus to provide a reliable 30-minute frequency service, and match the schedule to actual speeds.



The Draft New Network in Western Suffolk

Figure 13 shows the Draft New Network in the Western part of the County[1]. At present, SCT runs 30-minute service at midday on Routes S1, S40, S54, and a segment of NYS 25A with the combined Routes S60 and S76. These frequent corridors are also present (with a few changes, in the form of **Routes 1, 2, 6,** and **51**) in the Draft New Network since they connect relatively dense and busy places in a linear and direct manner in ways that lots of people find useful. In addition, there will be 30-minute service on:

- **Route 4** between Amityville, Wyandanch, Brentwood, Central Islip, and Smith Haven Mall.
- **Route 5** between Babylon, SCCC Brentwood Campus, Brentwood, and Central Islip.
- **Route 7** between Bay Shore, Brentwood, Huntington Square Mall, and Northport VA Medical Center.
- **Route 11** between Bay Shore, Brentwood, and Hauppauge, where buses will continue as **Route 17** between Hauppauge, Central Islip, and East Islip.
- **Route 12** between Farmingdale State College, Wyandanch, and Bay Shore.
- **Route 51** between Patchogue, Ronkonkoma, Smith Haven Mall, Stony Brook, and Port Jefferson, where alternate buses will continue as either **Route 53** (via SCCC Selden Campus) or **Route 55** (via Coram Plaza) to Patchogue. Similarly, northbound, buses on Routes 53 and 55 will continue as Route 51. On weekday nights and weekends, when Route 51 will run every hour, buses will continue as Route 55, but will offer a timed connection to Route 53 at Port Jefferson so that passengers can transfer with less waiting.
- **Route 52** between Gordon Heights, Ronkonkoma, and Central Islip.

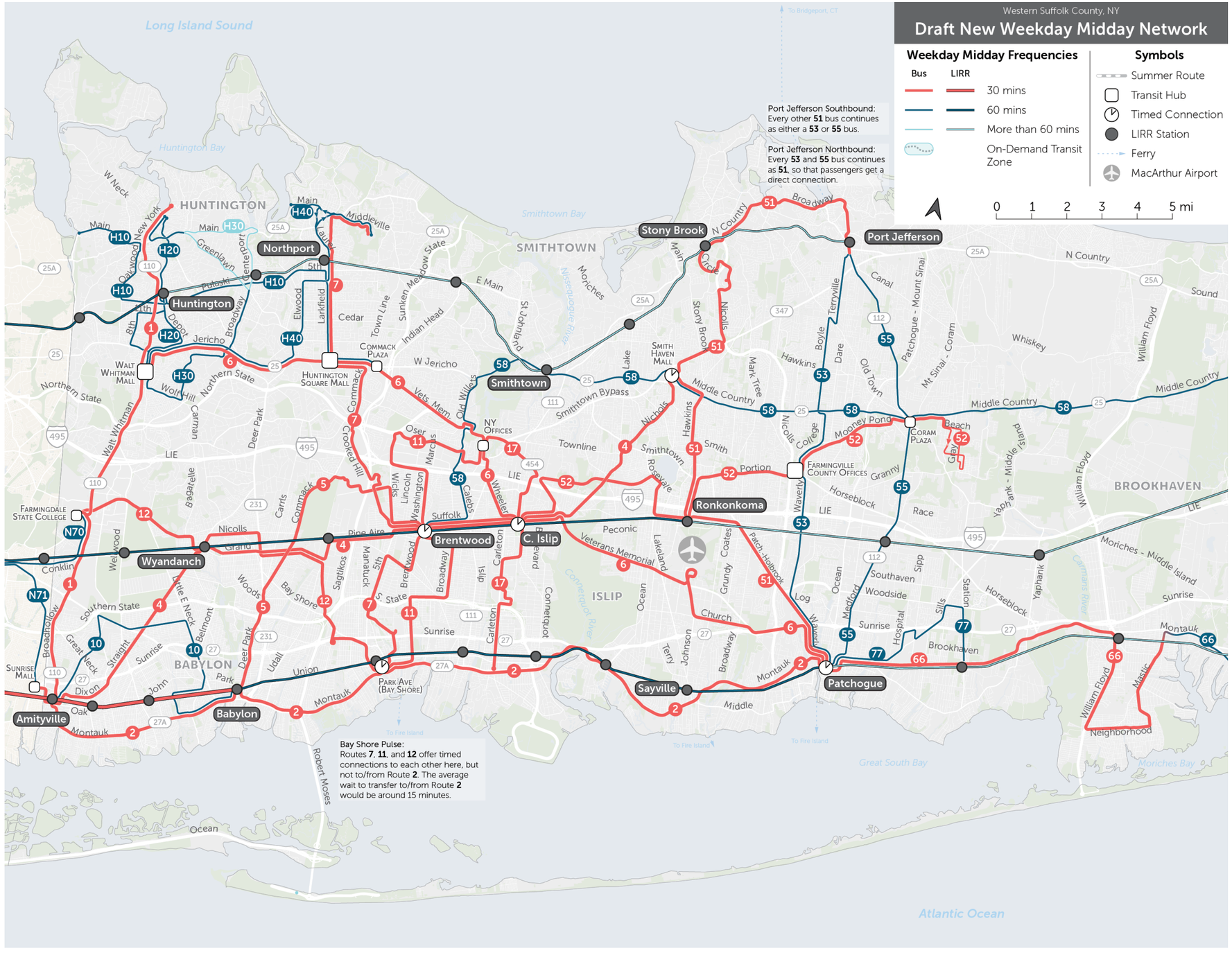


Figure 13: Map of the Draft New SCT Network in Western Suffolk

1 Note that HART routes (shown with the prefix "H" on the maps) and NICE routes (shown with the prefix "N" on the maps) are not part of the SCT network, and will not change in the Draft New Network.

- **Route 66** between Patchogue and Mastic, where every alternate bus will continue to Riverhead County Center.

There will be timed connections between the routes in several places:

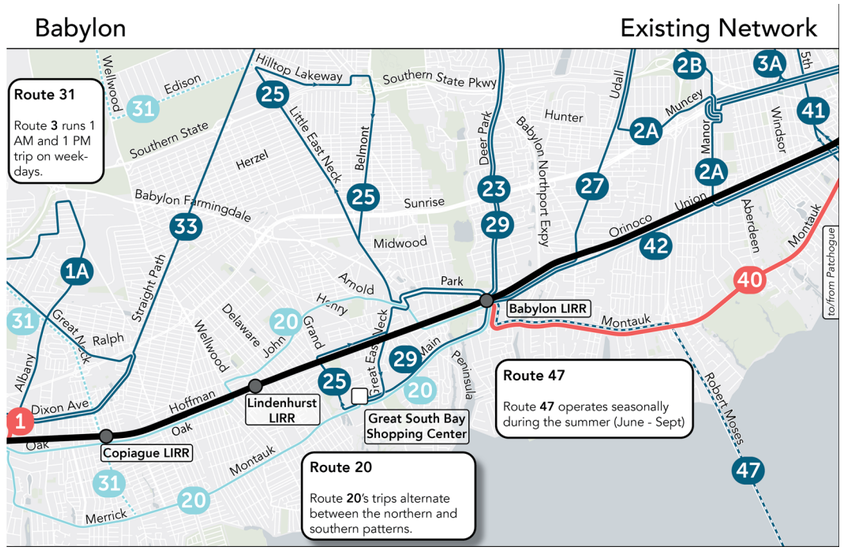
- **Bay Shore** (Mechanicsville Rd at Park Ave): Routes 7, 11, and 12 every 30 minutes.
- **Brentwood LIRR Station:** Routes 4, 5, 7, 11 every 30 minutes. Additionally, Route 58 during one of those times every hour.
- **Central Islip LIRR Station:** Routes 4, 5, 6, 17, and 52 every 30 minutes.
- **Smith Haven Mall :** Routes 4, 51, and 58 every 30 minutes. Additionally, Route 58 during one of those times every hour.
- **Patchogue LIRR Station:** Routes 2, 6, and 51 every 30 minutes. Additionally, Routes 53, 77 and the longer trip of Route 66 to Riverhead during one of those times every hour, and Route 55 and the shorter trip of Route 66 to Mastic the other time every hour.

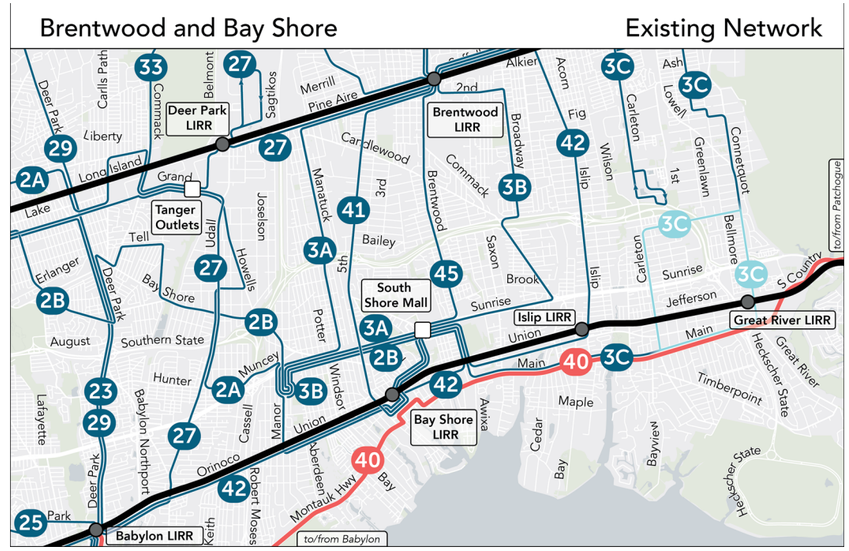
The new route patterns are simpler, and have fewer branches, large one-way loops, deviations, or duplicative patterns, particularly along Deer Park Avenue, Grand Boulevard, Montauk Highway, and around Bay Shore, Hauppauge, Smith Haven Mall, Stony Brook, and Port Jefferson.

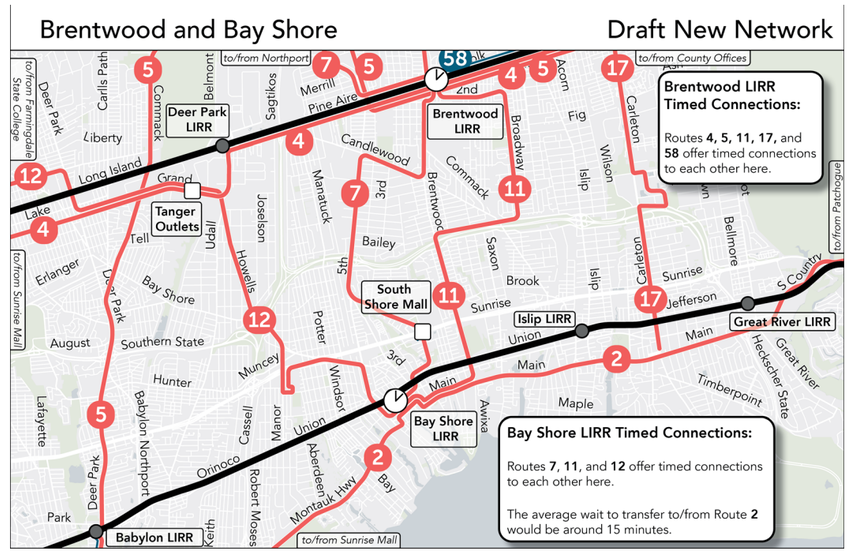
The areas in the Town of Islip served at present by the six hourly North-South routes S41, S42, S45, 3A, 3B, and 3C will be served in the Draft New Network by Routes 7, 11, and 17 which are spaced farther apart from each other but will be twice as frequent. In a similar fashion, in the town of Babylon, the areas served by Routes S25, S33 and 1A will be served by Routes 4 and 11, and the areas served by Routes S23, S27, S29, 2A, and 2B will be served by Routes 5 and 12.

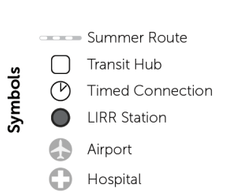
Towards the East, the transit network will also be greatly simplified near Patchogue, Holbrook, Ronkonkoma, Smith Haven Mall, Coram Plaza, Stony Brook, and Port Jefferson. There are no routes which are less frequent than every 60 minutes during the middle of the day, and Routes 51 and 52 offer 30-minute frequency.

Figure 14: Detailed comparisons of the Existing and Draft New Networks in Babylon, Brentwood, and Bay Shore areas.









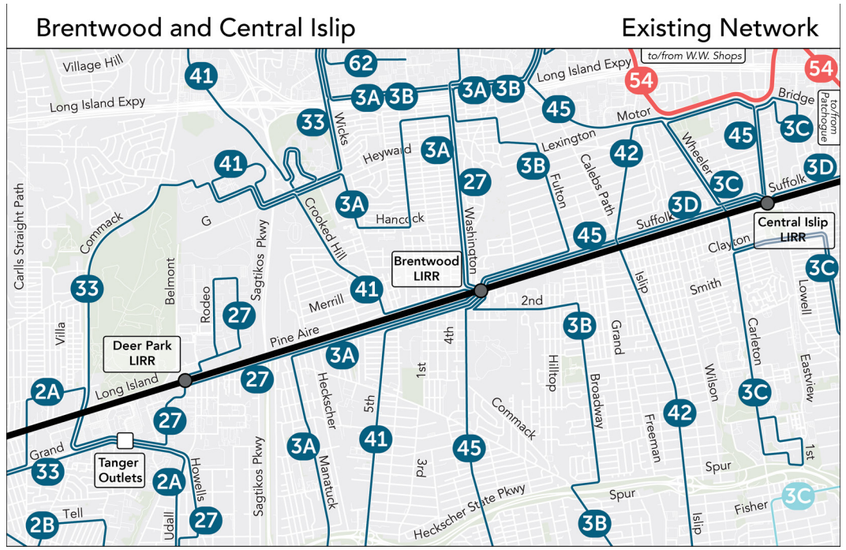
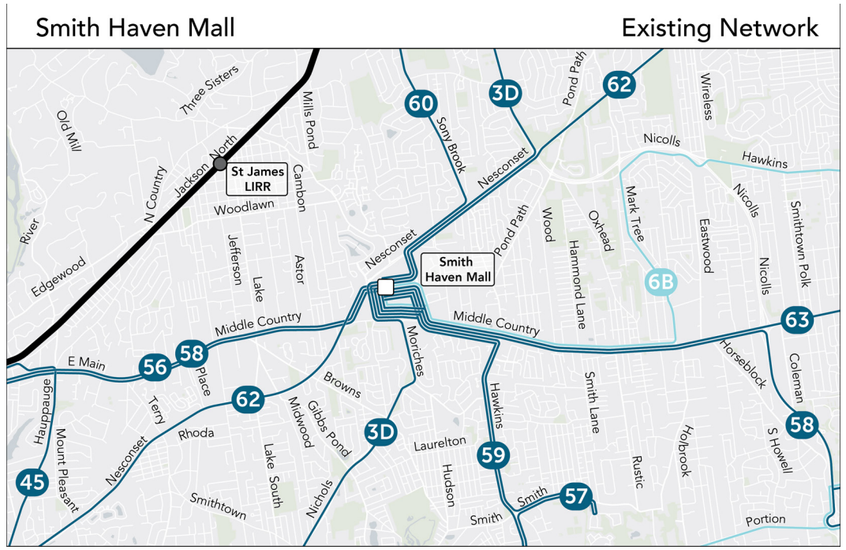
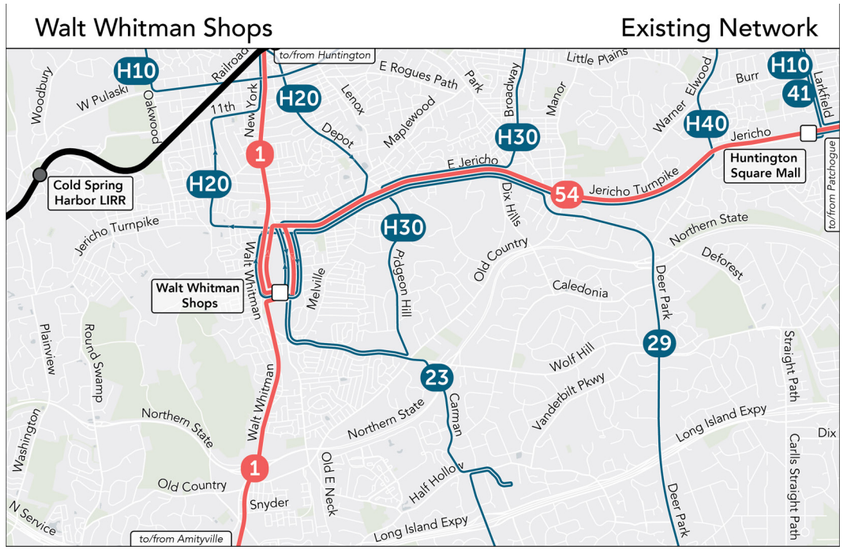
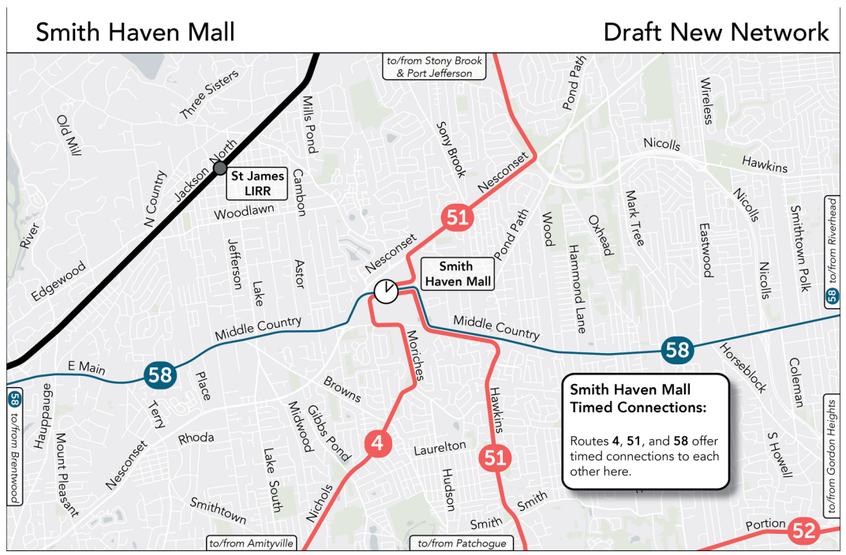
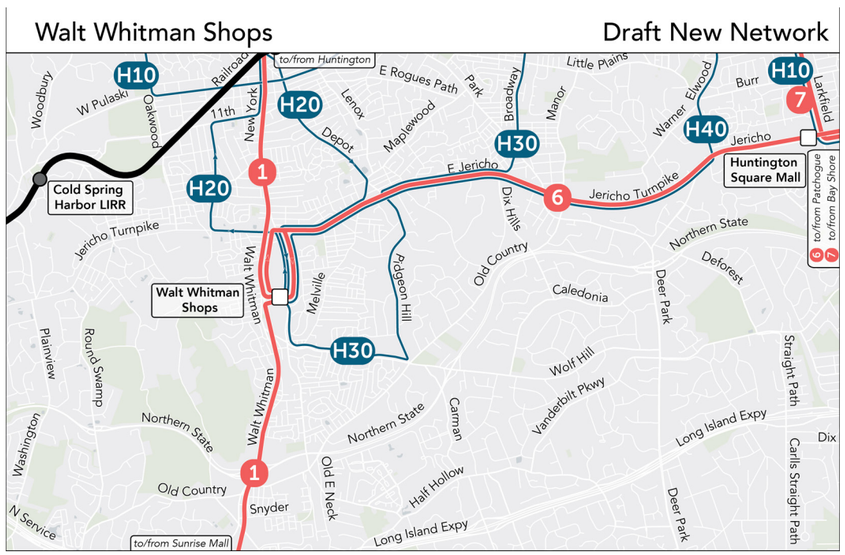


Figure 15: Detailed maps comparing the Existing and Draft New Networks in and around Brentwood, Central Islip, and Patchogue.









Weekday Midday Frequencies

Bus
- 30 mins
- 60 mins
- More than 60 mins
- On-Demand Transit Zone
- Long Island Railroad (LIRR)

Symbols
- Summer Route
- Transit Hub
- Timed Connection
- LIRR Station
- Airport
- Hospital

Figure 16: Detailed maps comparing the Existing and Draft New Networks in and around Smith Haven Mall and Walt Whitman Shops.

The Draft New Network in Eastern Suffolk

The Draft New Network will be quite similar to the Existing Network in the eastern portion of the County. **Route 92** only has a small change in alignment in Riverhead compared to the Existing Route S92 to simplify the various deviations made at present by Routes S92 and 8A. The schedule will be adjusted to provide a regular, hourly service during the midday, with additional peak period trips similar to the current schedule. Northbound and southbound buses on the route can meet each other - as well as and Routes **58 and 66** coming in from the western part of the County - at Riverhead County Center in a timed connection every hour.

The Southampton On-Demand Transit Zone, which is currently in its pilot phase, will be continued in 2022 and potentially onwards. In addition to this, there will be another On-Demand Transit Zone. This will serve the eastern end of the South Fork between East Hampton and Montauk Point, replacing the existing fixed Routes 10B and 10C.

The zoomed-in map of the Draft New Network in the Eastern portion of the County is shown below in Figure 17.

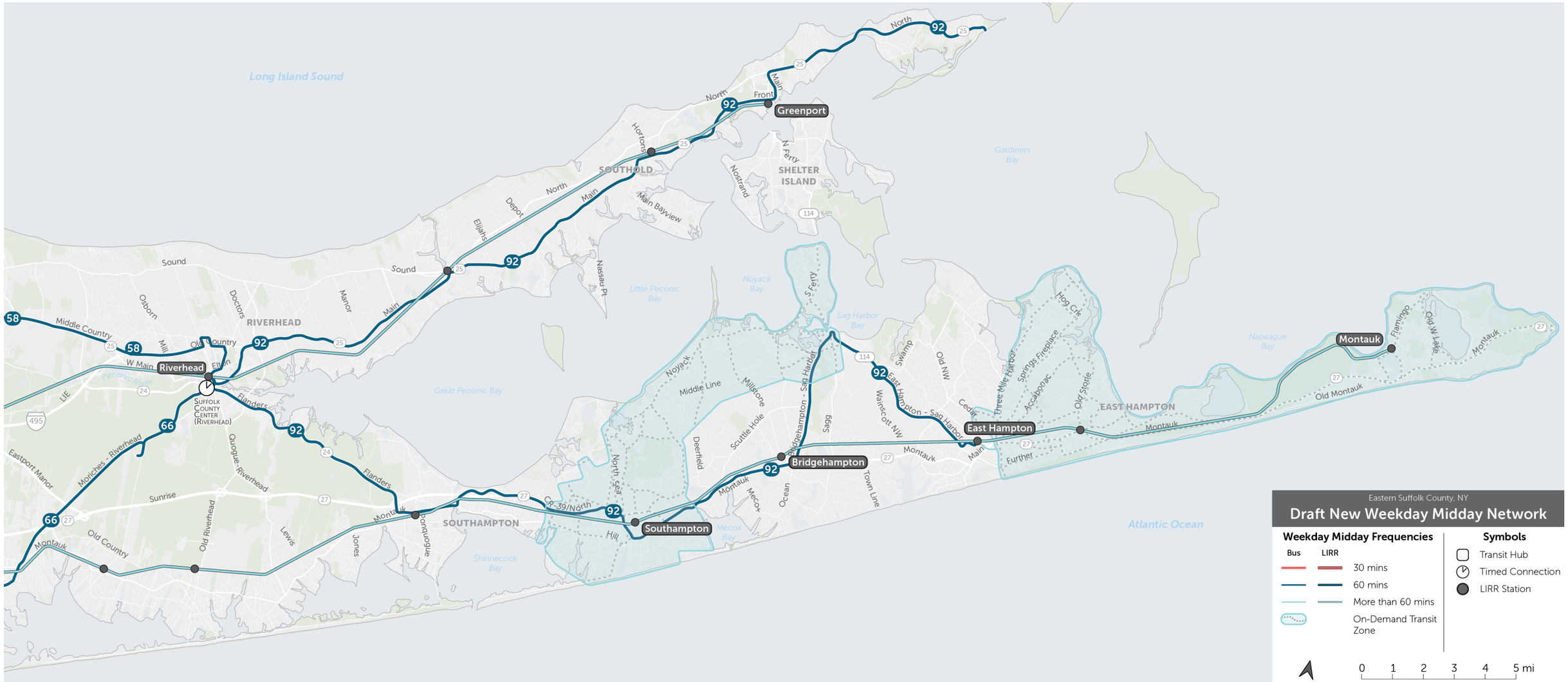


Figure 17: Map of the Draft New Network in Eastern Suffolk

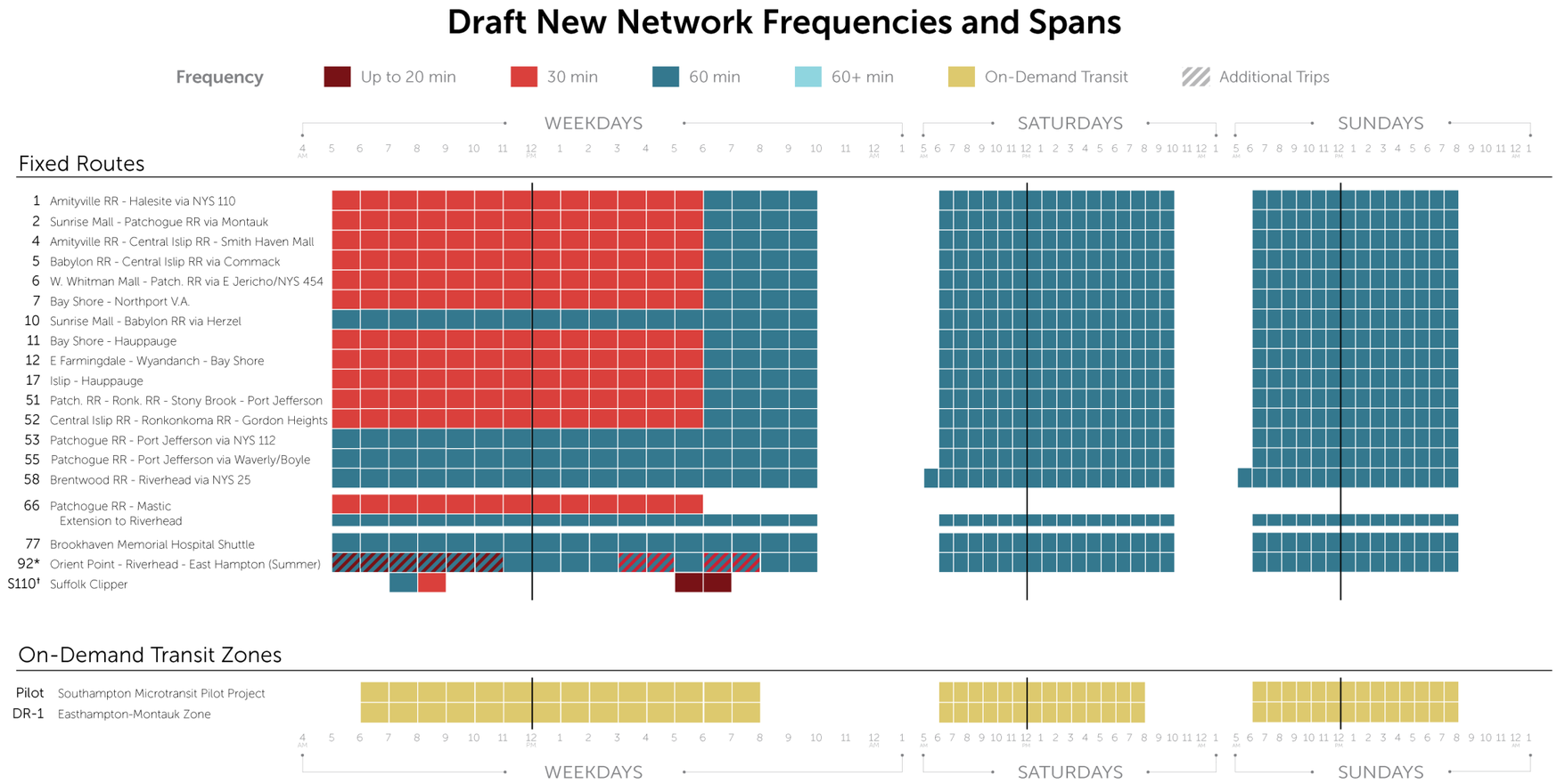
When is Service Available?

The chart on the right shows the frequency by time of day for the routes in the Draft New Network. To view the chart of frequency by time of day for the Existing Network, refer to the Appendix on page 36.

In general, most routes in Suffolk would have a more consistent service pattern across the Draft New Network, so that riders would know that their routes would be there all day, every day.

The frequent routes will run every 30 minutes between 5 am and 6 pm on weekdays. They will run hourly between 6 pm and 10 pm. The hourly routes will also run between 5 am and 10 pm on weekdays. For Route 66, the longer service pattern between Patchogue and Riverhead will continue in the evenings and weekends at every 60 minutes. Similar to today's schedules, Route 92 will have additional weekday trips in the morning and evening periods, which will offer higher frequency along some segments of the route. Note that the exact schedules will be decided during implementation.

There will also be much more consistent spans of service on weekends, when all routes will run 60-minute service. In contrast to the Existing Network, all the routes will also be running on Sundays. Thus, midday service on Saturdays and Sundays will be identical in the Draft New Network. Weekend service will be much more useful for people needing to travel on Sundays for work, recreation, religion, shopping, or any other reason. Maps of transit service during the middle of the day on Sundays in the Existing Network and during the middle of the day on both Saturdays and Sundays in the Draft Network are shown on the next page.



* Route 92 will have additional scheduled morning and evening trips on weekdays, offering higher frequency along some segments.
† The existing Suffolk Clipper route will be maintained.

Figure 18: Chart Showing Frequency by Hour for Routes in the Draft New Network

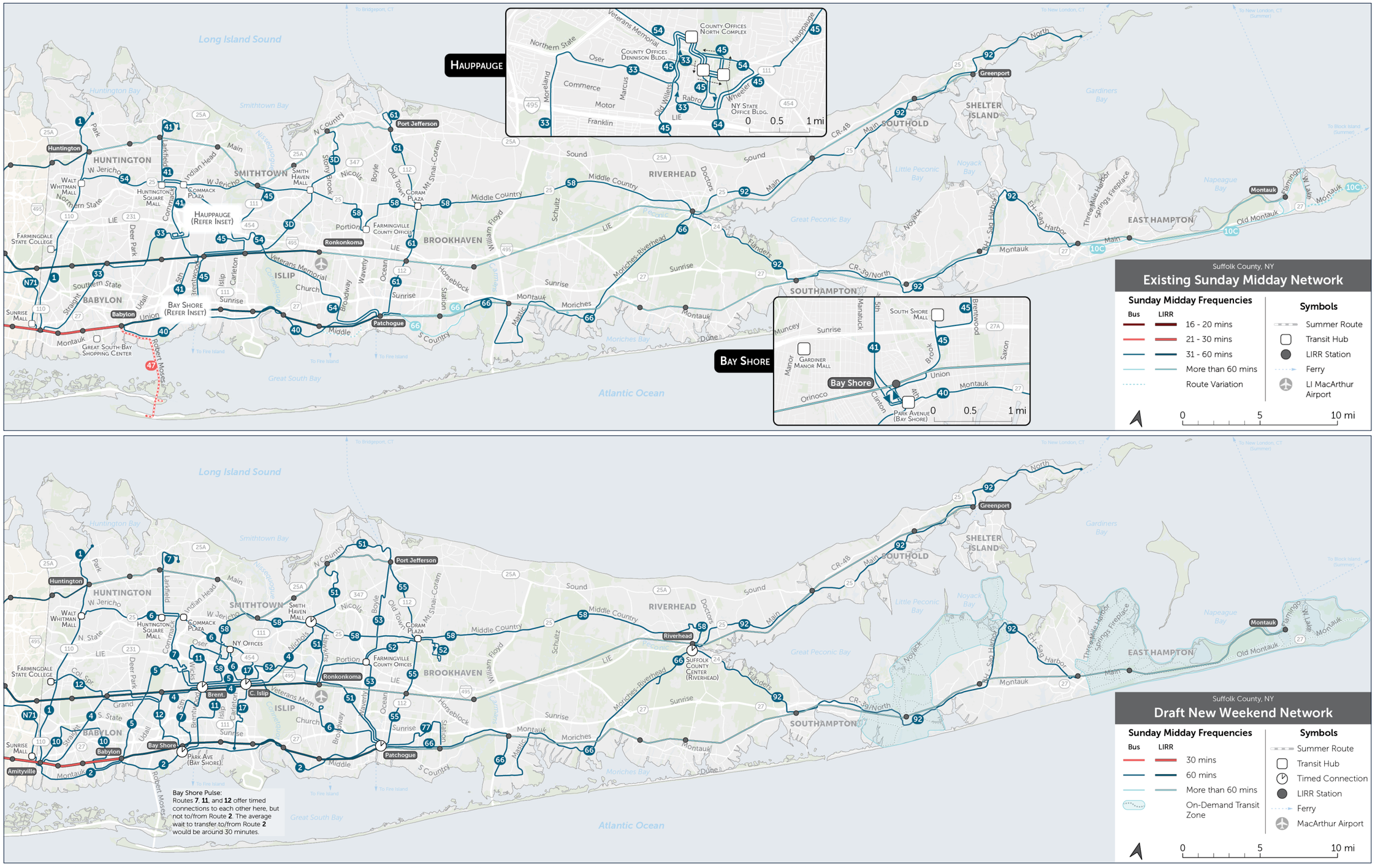


Figure 19: Maps of the Existing Network on Sunday at Midday (Top) and Draft New Network on Saturday and Sunday at Midday (Bottom)

4 Comparing Outcomes

Network Outcomes

The design of the network and when and where service operates are important components for thinking about how service changes might affect individuals and their trips. However, they tell us only so much about the overall effects of a new network.

In this section, we look at three different ways of measuring the potential outcomes of the Draft New Network. These measurements are not forecasts. They do not make assumptions about how culture, technology, prices or other factors will change in the next few years.

These are simple arithmetic measures that combine existing distance, time and population information to show the potential of the Draft New Network and how it differs from the Existing Network.

Wall Around Your Life

To understand the benefits of a network change, consider this simple question: *Where could I get to, in a given amount of time, from where I am?*

This question refers to the physical dimension of liberty and opportunity. If you can get to more places in a given amount of time, you will be more free and have more opportunities outside your immediate neighborhood.

Isochrones provide a visual explanation of how a transit network changes peoples' freedom to travel, on foot and by transit, to or from a place of interest. A few examples are included in this report beginning on page 27. Further examples are available in the Appendix starting on page 41.

Access

Isochrones display the change in access that a person would experience to or from a particular place. By summing up the isochrones for every single part around the County, we can describe how access to jobs would change for all residents of the service area.

This is a good proxy for a ridership forecast, because it describes the part of ridership forecasting that is basic math and highly predictable:

Could more people access more jobs (and other opportunities) by transit, in less time? If the answer is "Yes," that implies higher ridership potential.

Proximity

Another simple measure is reported in this section: *How many residents and jobs are near transit?*

Proximity does not tell us how useful people will find transit service, only that it is nearby to them. We also report on proximity to transit by the frequency of service, to provide a little more information about how many people are near service that they are more likely to use.

Freedom, Access, Usefulness

People ride transit if they find it useful. High transit ridership results when transit is useful to large numbers of people. A helpful way to illustrate the usefulness of a network is to visualize where a person could go by transit and walking, from a given location, in a given amount of time.

The map in Figure 20 shows someone's access to and from Bay Shore in 60 minutes, at midday on a weekday in the Draft New Network, compared to the Existing Network. The technical term for this illustration is an **Isochrone.** A more useful transit network is one in which these isochrones are larger, so that each person is likely to find the network useful for more trips.

The darker blue represents areas that are reachable today and remain reachable in the Draft New Network. Areas that are newly reachable are shown in lighter blue, and areas that are no longer reachable are shown in gray. More examples of isochrones are on the next page and in the Appendix starting on page 41.

Not Just the Area – Also What is Inside the Area

The real measure of usefulness is not just how much geographic area we can reach, but how many useful destinations are in that area. Ridership arises from service being useful, for more people, to get to more busy places. That's why predictive models of ridership do this very same analysis behind-the-scenes.

When reviewing these maps, remember that waiting time counts. 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. Also remember that some of the access shown in these maps isn't reached on a single route, but requires a transfer.

Bay Shore - Mechanicsville Rd @ Park Ave

+34,000 Jobs (+71%), +93,000 Residents (+70%)

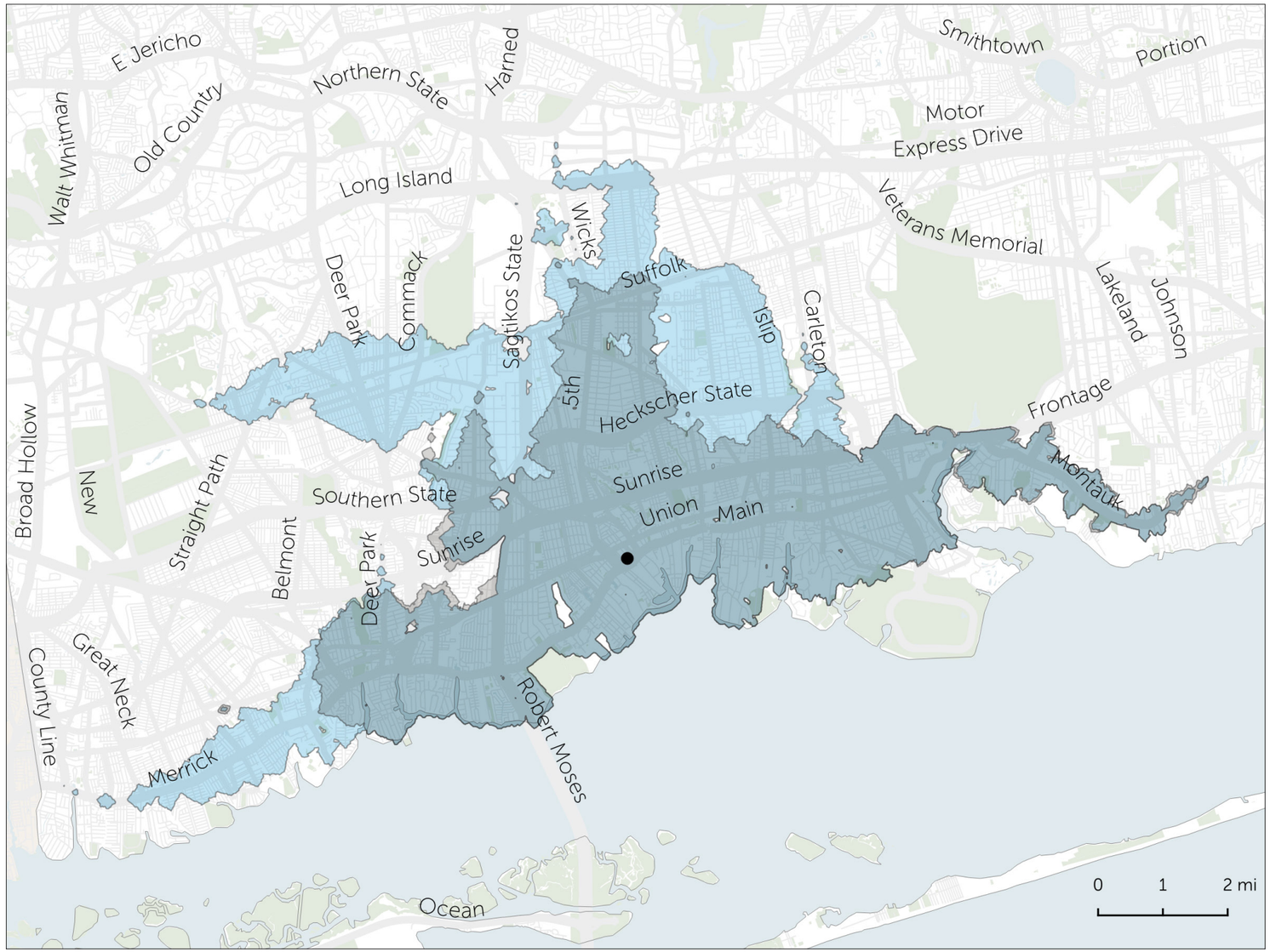
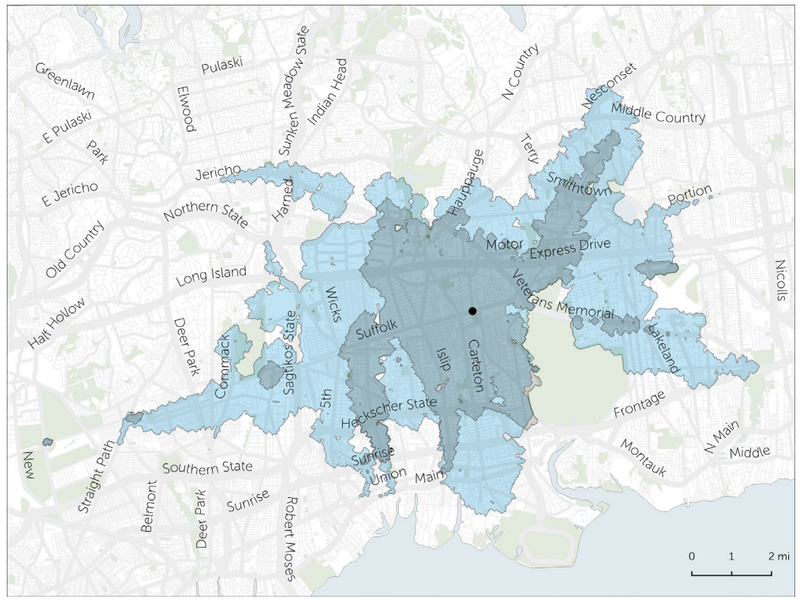
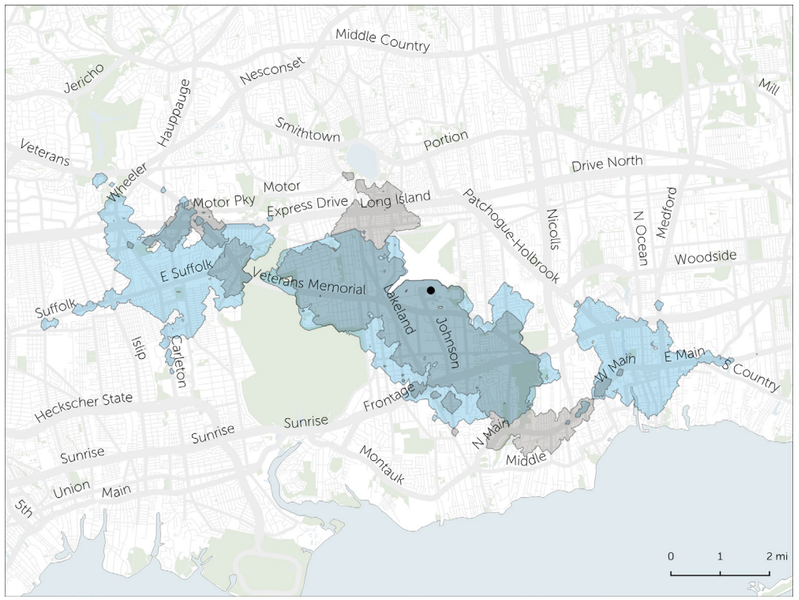


Figure 20: An isochrone shows how far someone can go, in a given amount of time, by walking and transit. These isochrones from the Bay Shore Mechanicsville hub show change in access to jobs and residents in 60 minutes in the Draft New Network and Existing Network.

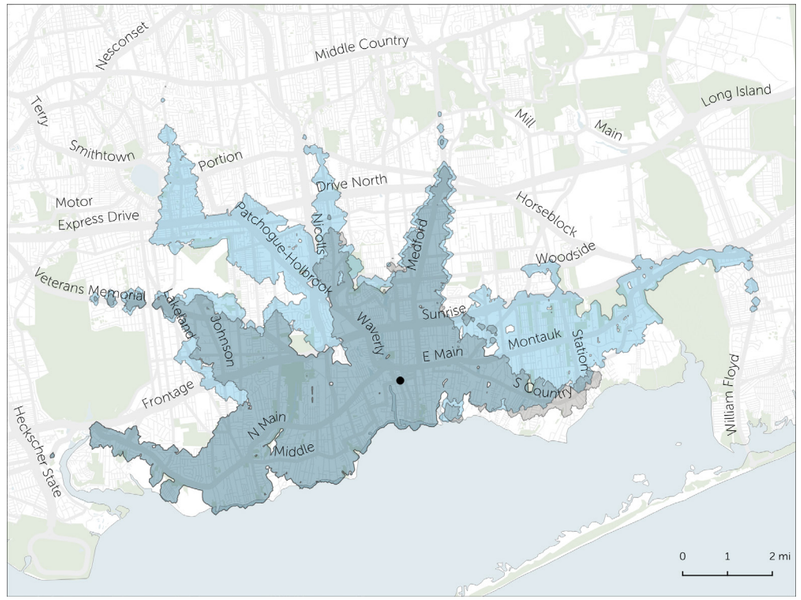
Central Islip LIRR
+84,000 Jobs (+173%), +141,500 Residents (+143%)



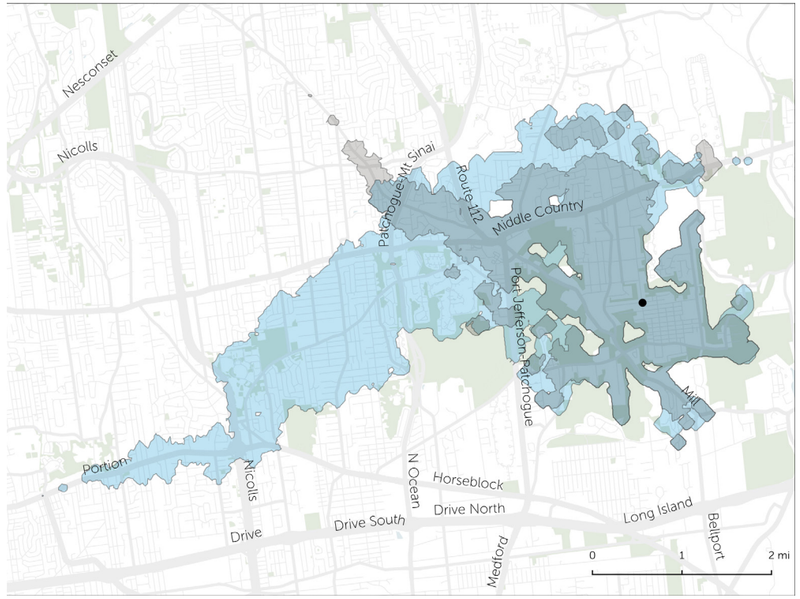
Long Island MacArthur Airport
+18,600 Jobs (+56%), +32,500 Residents (+114%)



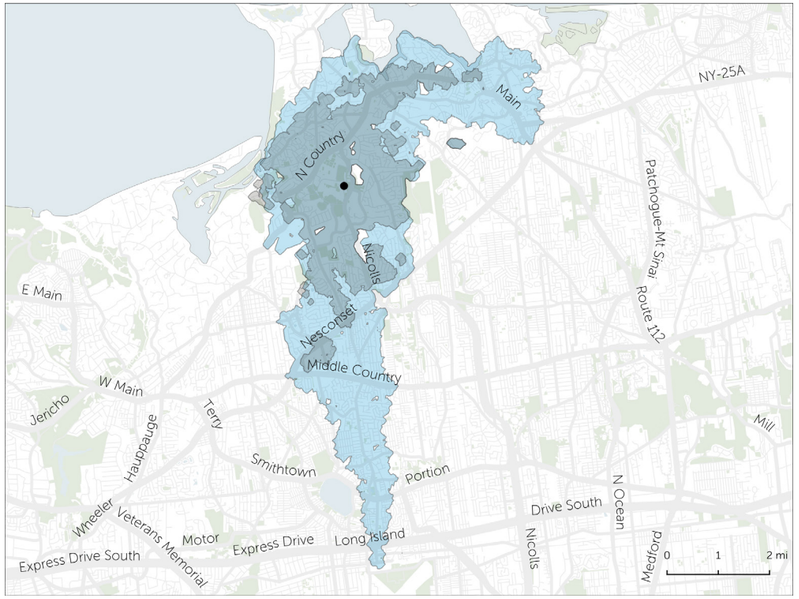
Patchogue LIRR
+16,700 Jobs (+44%), +44,900 Residents (+60%)



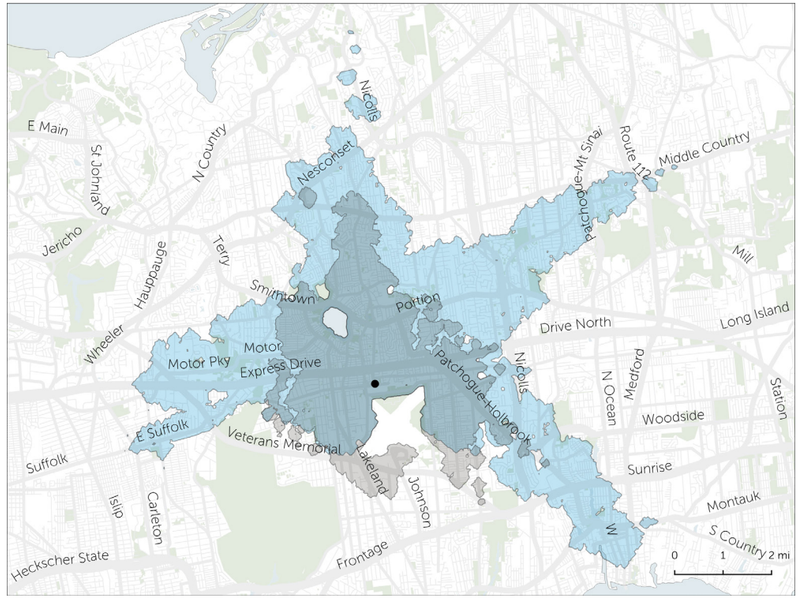
Gordon Heights
+5,000 Jobs (+159%), +21,100 Residents (+148%)



Stony Brook University
+17,700 Jobs (+69%), +34,400 Residents (+146%)



Ronkonkoma LIRR
+28,700 Jobs (+133%), +76,900 Residents (+148%)



Newly Accessible in the Draft New Network

Retained Access in the Draft New Network

Not Accessible in the Draft New Network

Figure 21: Isochrones Comparison Showing How Far People Can Go in 60 Minutes Using Transit From Various Locations in the County (See Appendix for more locations)

Change in Access

The previous maps show how the Draft Network changes where people could go in a given time, from certain places in the County (access to other opportunities, like education and shopping would likely change in a similar way).

We can run the same analysis on a grid of locations throughout the County to estimate how the Draft New Network changes access to jobs and opportunities across the entire County.

The maps on the next two pages illustrate this. In these maps, every hexagon represents the number of jobs that can be reached in 60 minutes as compared to the Existing Network. Blue hexes represent more jobs accessible and orange hexes represent fewer jobs available. Hexes are also sized by the number of people who live in each hexagon. Where no hexes are shown, there is very little change (less than 1,000) in the number of jobs accessible within 60 minutes from that location in the Draft Network.

With more frequent routes across most of the Western part of the County, the Draft New Network substantially increases access to jobs and opportunity. Traveling within the denser part of the County would be much faster, because waiting times would be much shorter, both for the initial wait for a bus and for a connection. This means that within a given time, people can access much more area. The Draft New Network requires some people to walk longer distances, but it gets most people farther and faster to their destinations, primarily due to shorter waits.

The Draft New Network concentrates more useful service (and hence increases job access) where there are the most people. This is seen in the Western five towns as big, dark blue hexes. The biggest gains are in the Central Islip-Brentwood area, along Straight Path, Montauk Highway, and near Stony Brook University.

Since some areas are too far from transit compared to the Existing Network, their access to jobs is lower. These areas are presently covered by parts of Routes S25, S27, 2A, S57, S59, 6A, 6B, and S62. In these areas in the Draft New Network, duplication and complexity of service is reduced, or no service is provided due to much lower density than other parts of the County.

Overall Change in the Concepts

The maps on the next two pages show how the Draft New Network changes access to jobs for different parts of Suffolk County. By adding up all the increases and decreases across the County, we can estimate how it changes the access to jobs for the average County Resident.

Figure 22 shows the change in how many jobs people could reach by walking and transit in 60 minutes on average across the County. With the Existing Network, the average person can reach about 17,200 jobs in 60 minutes by transit. In the Draft New Network, the improved frequency of service and timed connections substantially increase the number of jobs the average person could reach to 25,500, a 48% increase.

It is also worth considering how these job access factors change for people identifying as racial or ethnic minorities, or people in disadvantaged situations. The Draft New Network increases access to jobs for Residents of Color by about 67%, because it improves service in areas where there are higher percentages of Residents of Color. For Low-income Residents and Households Without Cars, the Draft New Network substantially increases the access to jobs for both population groups: 59% more for Low-income Residents and 53% more for Residents Without Cars. The Draft New Network increases average job access for people in disadvantaged groups more than it does on average for people in the whole County. So by this measure, the Draft New Network is achieving a more equitable outcome.

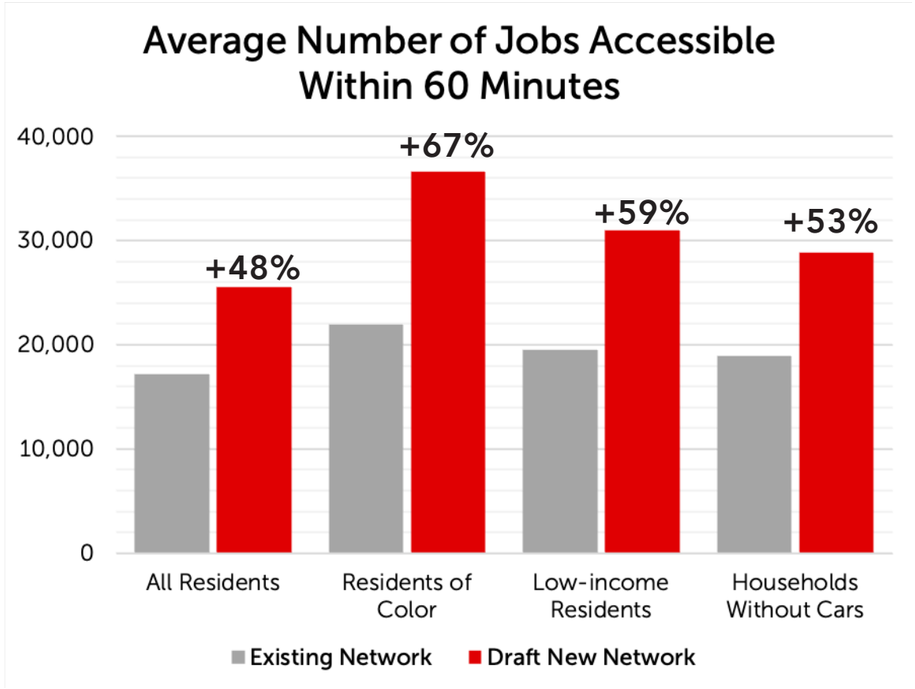


Figure 22: Average 60-Minute Job Access for Residents, Minority Residents, Low-Income Residents, and Residents Without Cars for the Existing Network and the Draft New Network

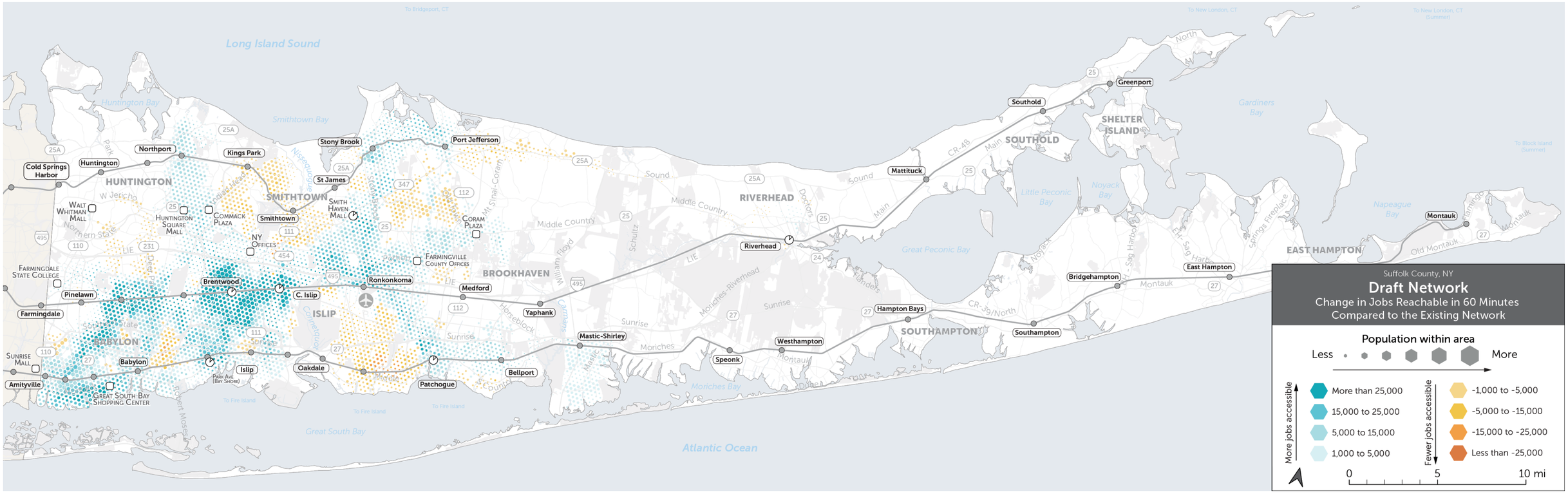


Figure 23: Change in Jobs Reachable in 60 minutes in the Draft New Network Compared to the Existing Network in Suffolk County

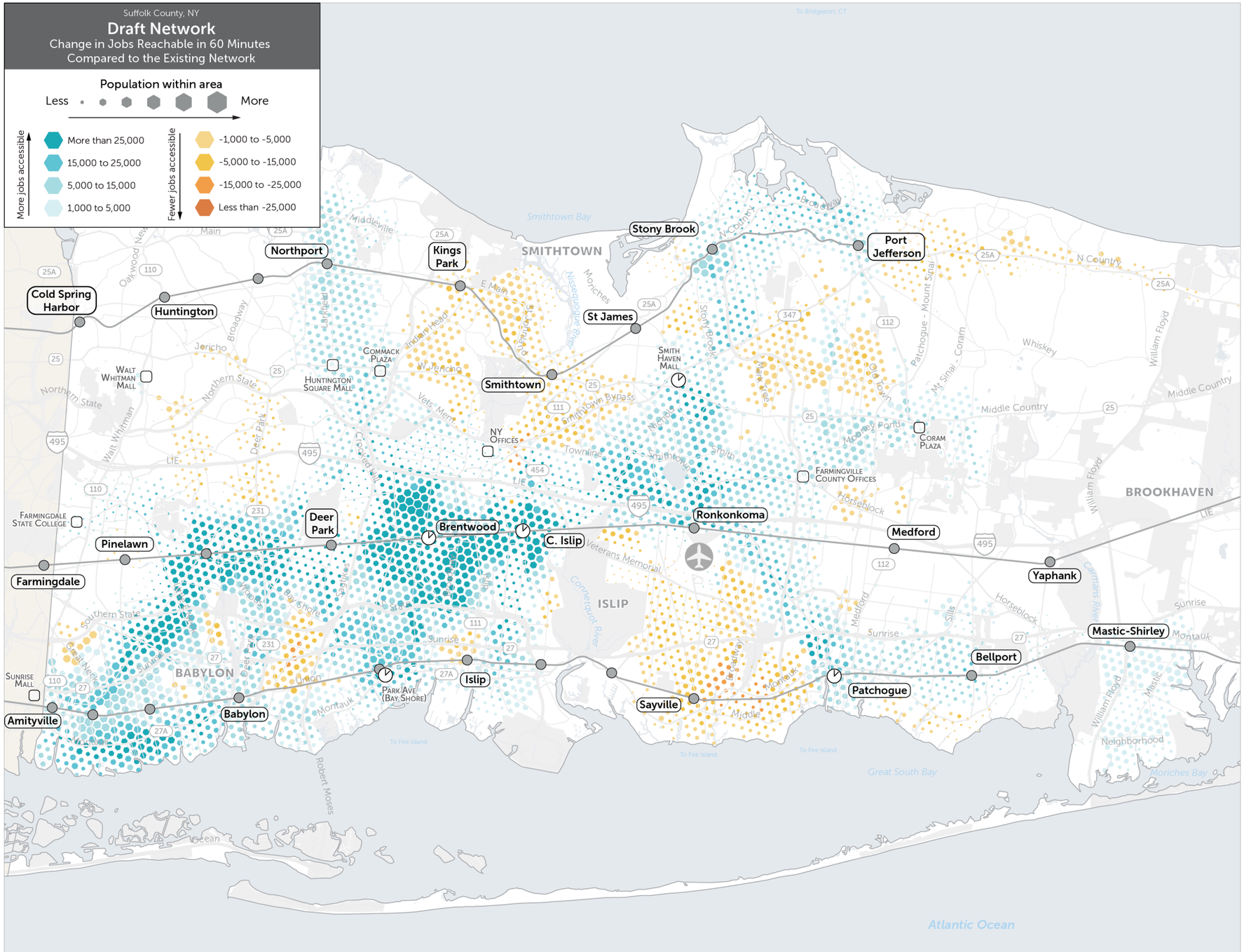


Figure 24: Change in Jobs Reachable in 60 minutes in the Draft New Network Compared to the Existing Network in the Western Part of Suffolk County

Change in Proximity

The number of people and jobs within a certain distance from transit is the simplest measure of transit outcomes. In this report we call this measure **proximity to transit,** and define it as how many people and jobs are located within half a mile of a bus stop with service at a particular frequency. The charts below show how many Residents, Low-income Residents, Households Without Cars, Residents of Color, and Jobs in the County would be within 1/2 mile of transit service in the Draft New Network.

The Draft New Network would significantly increase the number of people and jobs **near frequent service,** as more routes would be running every 30 minutes. Overall, the Draft New Network would get nearly 41% of Residents near frequent service, more than three times as much as today. Around twice as many Jobs (52% compared to 25%) will be near frequent transit service. Around three times as many Households Without Cars, and four times as many Residents With Limited Incomes as well as Residents of Color will be within 1/2 mile of 30-minute transit service.

These increases in proximity to frequent service do come with a trade-off. A certain proportion of residents and jobs would now be more than 1/2 mile from any transit service. Overall, an additional 8% more Residents and 9% more Jobs would be more than 1/2 mile away from transit in the Draft New Network, compared to the Existing Network. When looking at Low-income Residents, Households Without Cars, and Residents of Color, this is around 9% to 10%.

This reflects the basic geometric trade-off: ridership goals focus the highest frequency and most useful transit service to the best markets for transit with the goal of reaching the most jobs and places most likely to generate high ridership relative to cost.

Proximity does not tell us how useful the service is to people—only that it is nearby. In pursuit of a maximum coverage goal, an agency will spread service thinly, to cover as many people as possible. Spreading transit thinly means routes have low frequencies, short spans, and circuitous routing that might now be useful but help an agency meet a coverage goal.

Proximity to frequent service is a key measure of ridership potential. Frequent service is more expensive relative to the area it covers, but it is more useful by offering travel times more competitive with driving and therefore tends to attract higher ridership. Thus, the more people and jobs near frequent service, the more a network is achieving a ridership goal. Or, another way to think about the Ridership Concept is that its network provides highly useful service to most people, at the expense of providing service to fewer people and places.

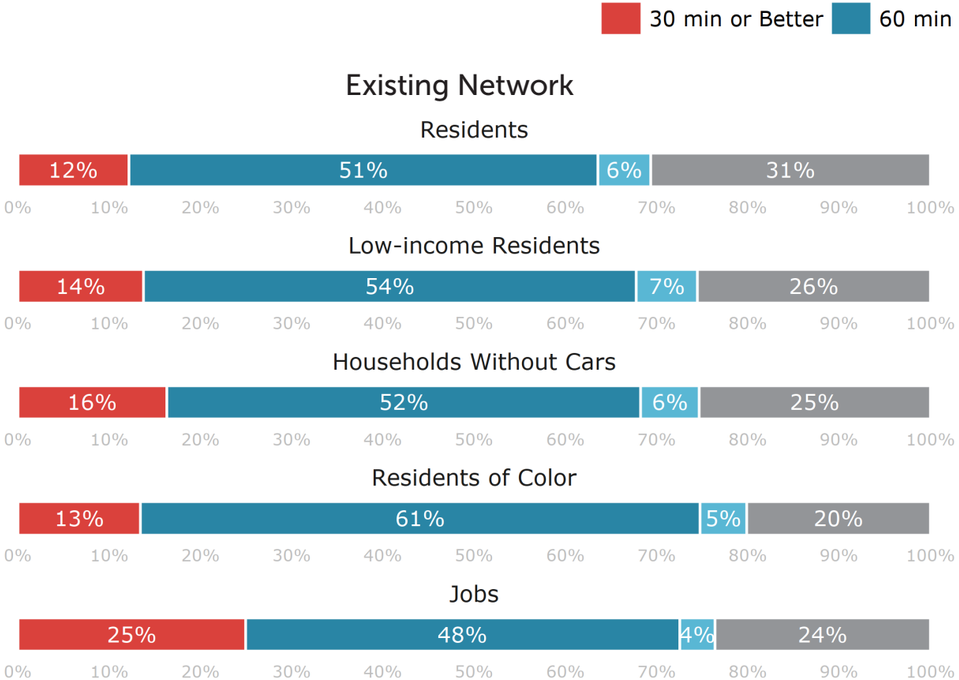


Figure 25: Proximity to Transit Service in the Existing Network

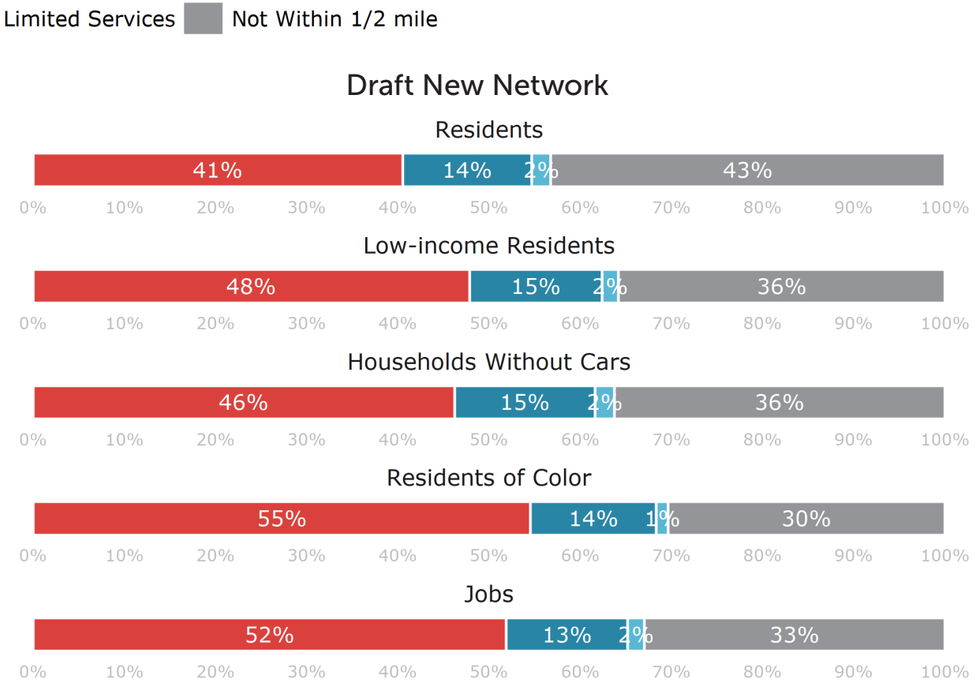


Figure 26: Proximity to Transit Service in the Draft New Network

5 Next Steps

Next Steps

If you're interested enough to read this far, we'd love to have you more involved in this project!

This report describes the Draft New Network, but it is just a draft. This report kicks off a round of public engagement to get feedback on the Draft New Network and hear from you about whether you prefer this network to the Existing Network and whether you would like to see any changes in this draft.

From December 2021 through February 2022, members of the project team, Suffolk County staff, and others will be engaging the public through media outreach, social media engagement, surveying at key transit centers, and other places. The project team will continue engagement with a select group of local representatives convened at the start of the study called the Reimagine Transit Advisors. Through this process, we need you to tell us what you think about the Draft New Network.

Once we have gathered the public responses, Suffolk County staff and the consultant team will work together to revise the plan and produce a final recommendation by Summer 2022. If Suffolk County decides to move ahead with the recommendations, then there will be additional community notification before any actual service changes are made. Implementation of the final recommendations would begin in early 2023.

For more information and to stay involved in the project, go to https://www.connectli.org/ReimagineTransit.html to

- take the survey;
- email the team to ask questions;
- find out more about meetings and events where you can learn more about the entire Reimagine Transit process; and
- generally stay up to date on the latest happenings with the network redesign process!

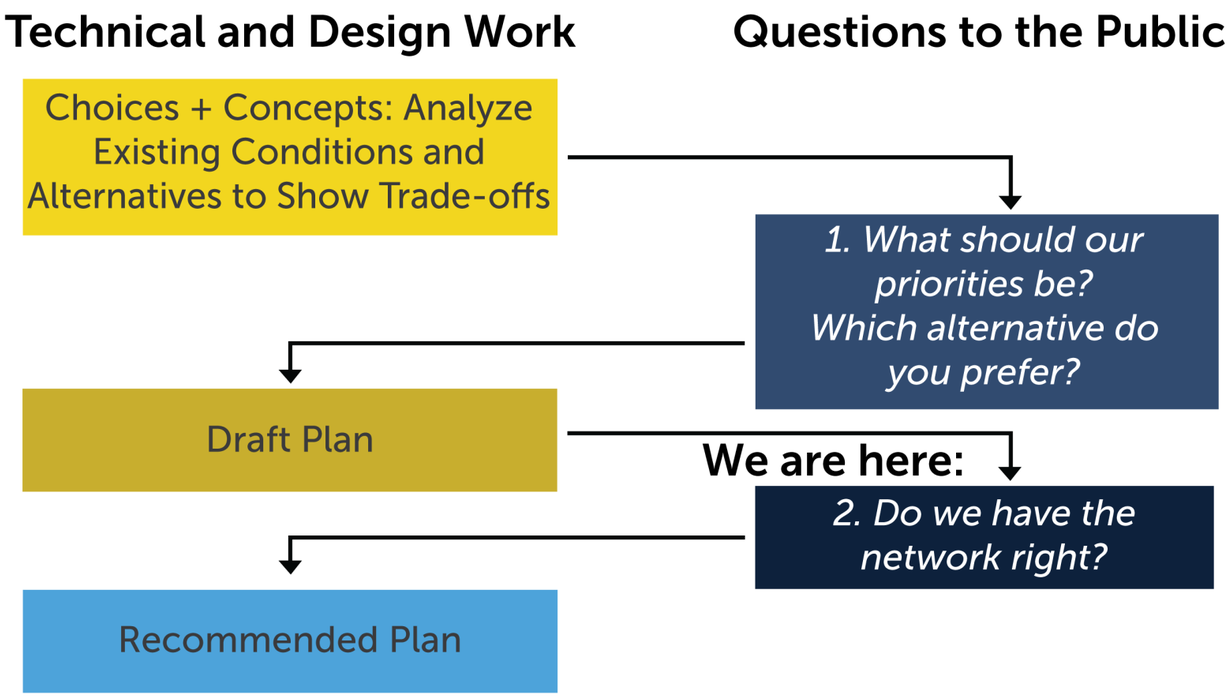


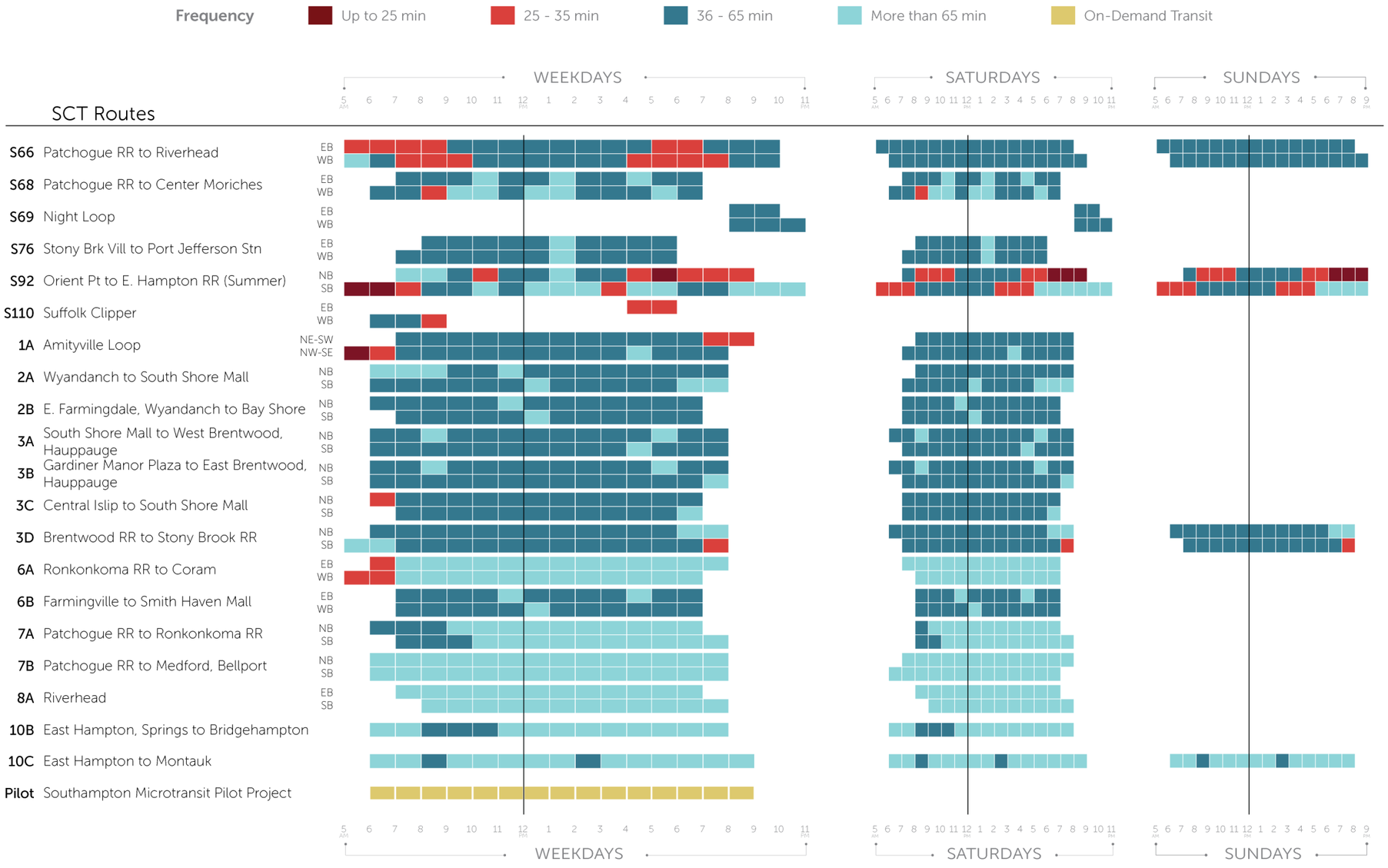
Figure 27: The process of technical work and public engagement that will inform the Reimagine Transit process for SCT.

Appendix

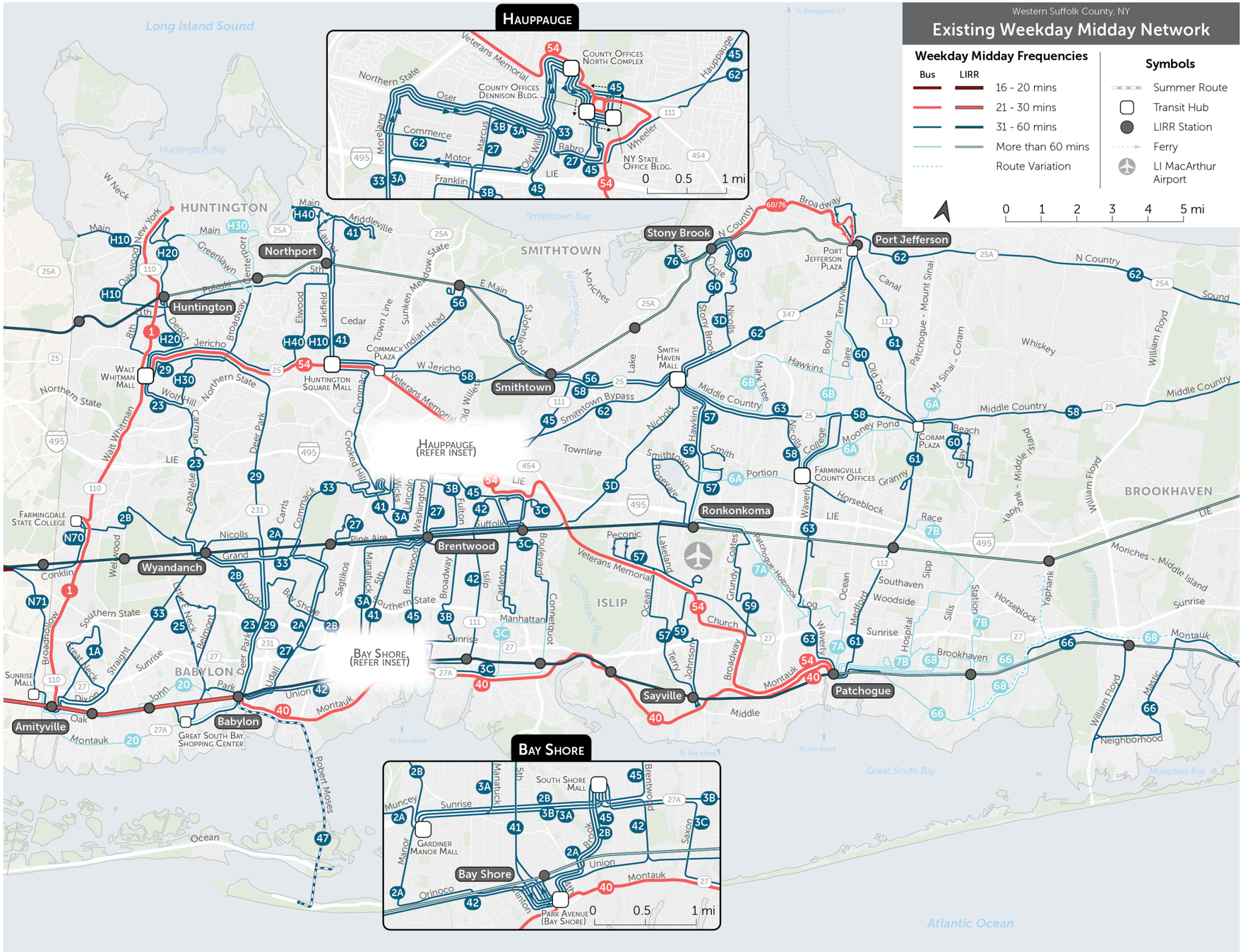
SCT Existing Transit Frequency by Hour and Direction

SCT Existing Frequencies and Spans (1/2)

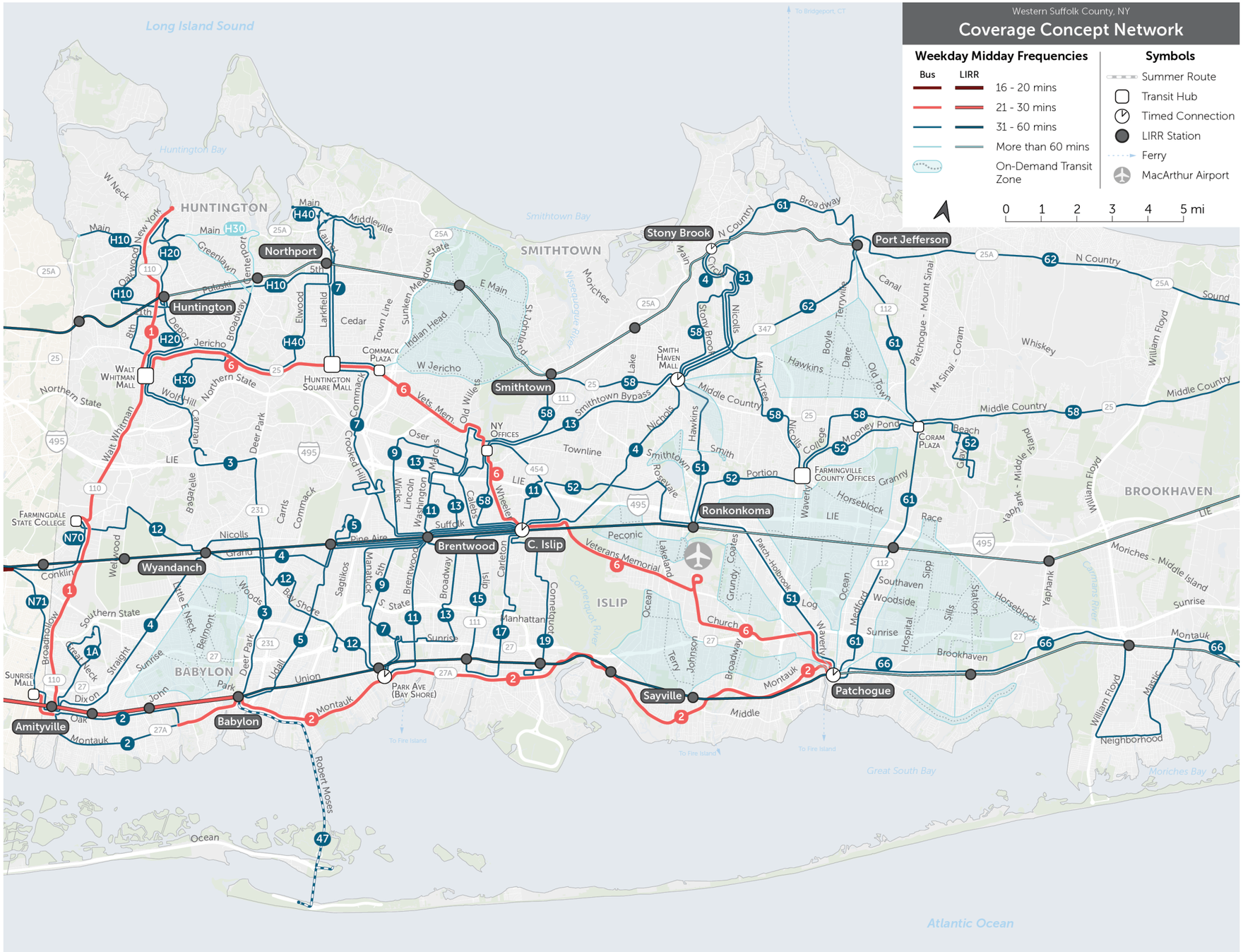
SCT Existing Frequencies and Spans (2/2)



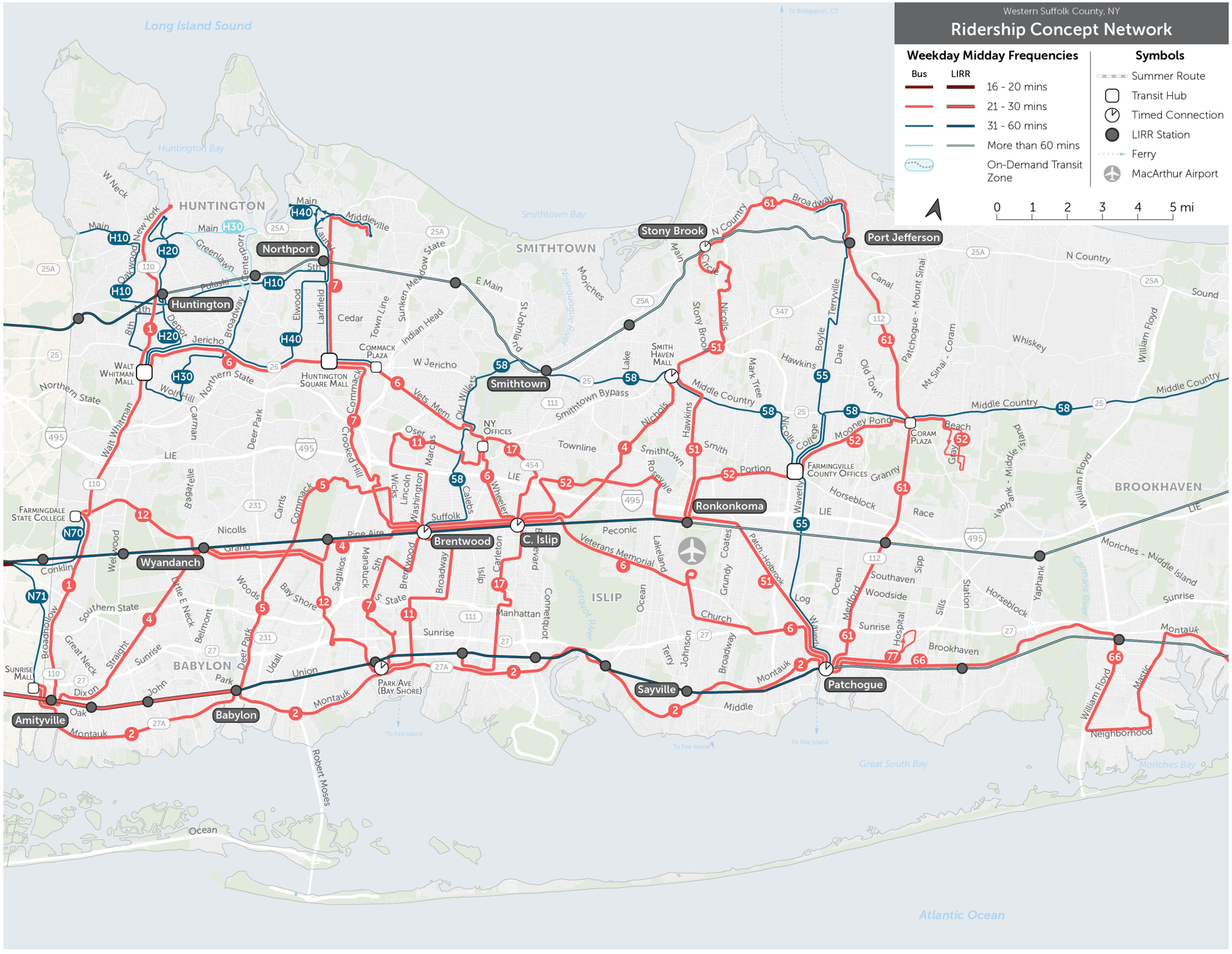
Map of the Existing SCT Network in Western Suffolk



Map of the Coverage Concept Network in Western Suffolk

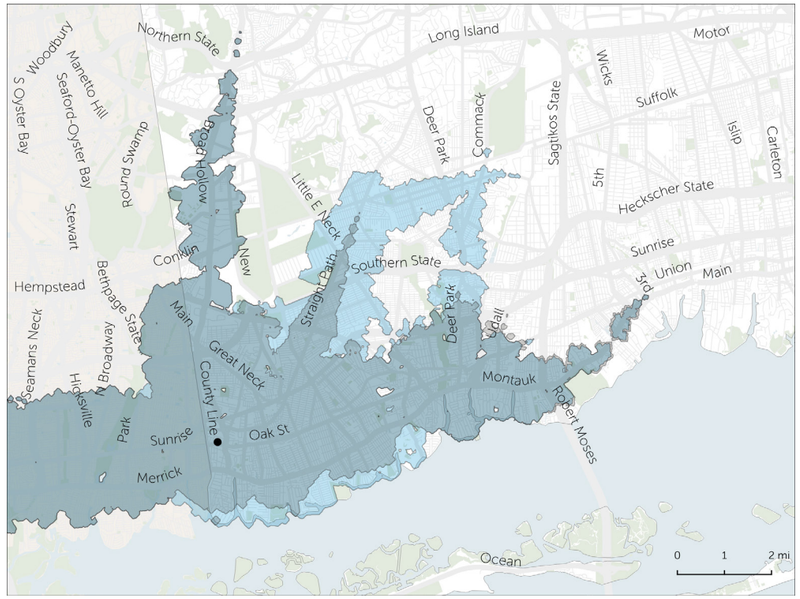


Map of the Ridership Concept Network in Western Suffolk

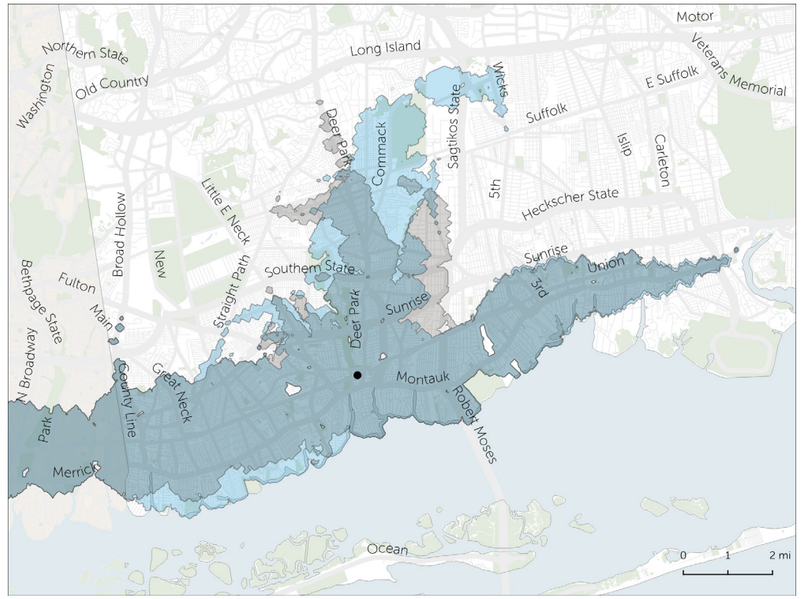


Change in Areas Reachable in 60 Minutes in the Draft New Network

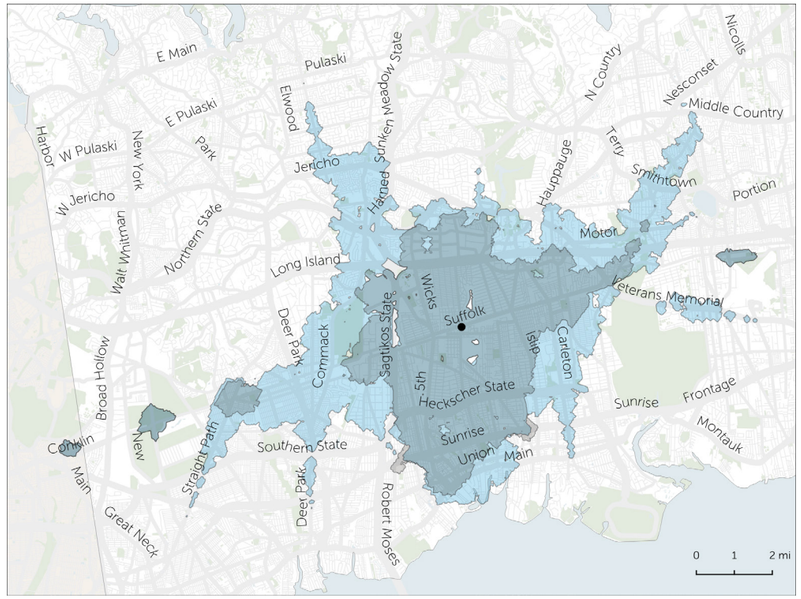
Amityville LIRR
+13,000 Jobs (+9%), +49,600 Residents (+16%)



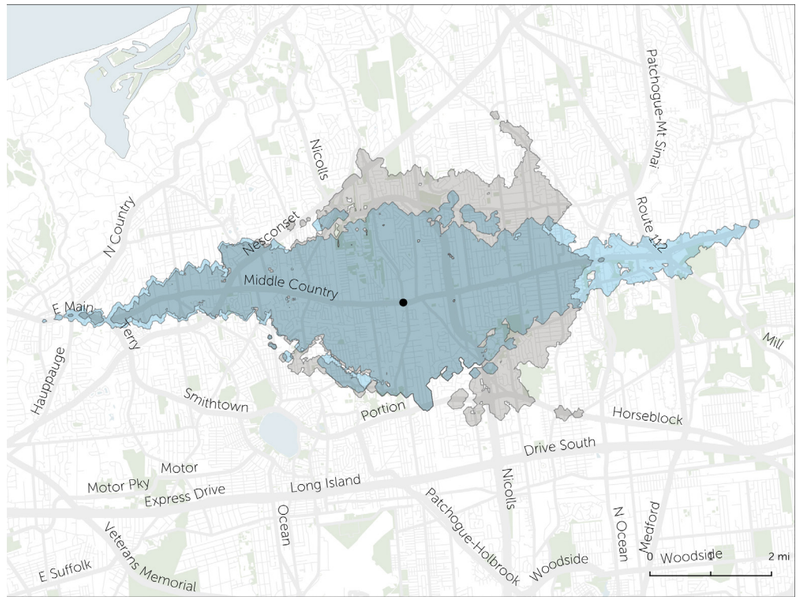
Babylon LIRR
+11,500 Jobs (+11%), +20,600 Residents (+8%)



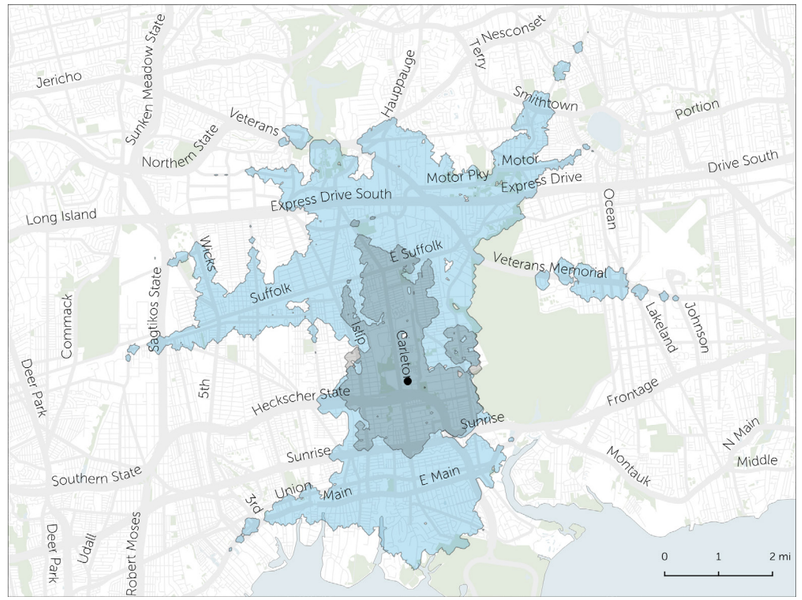
Brentwood LIRR
+54,400 Jobs (+75%), +95,600 Residents (+64%)



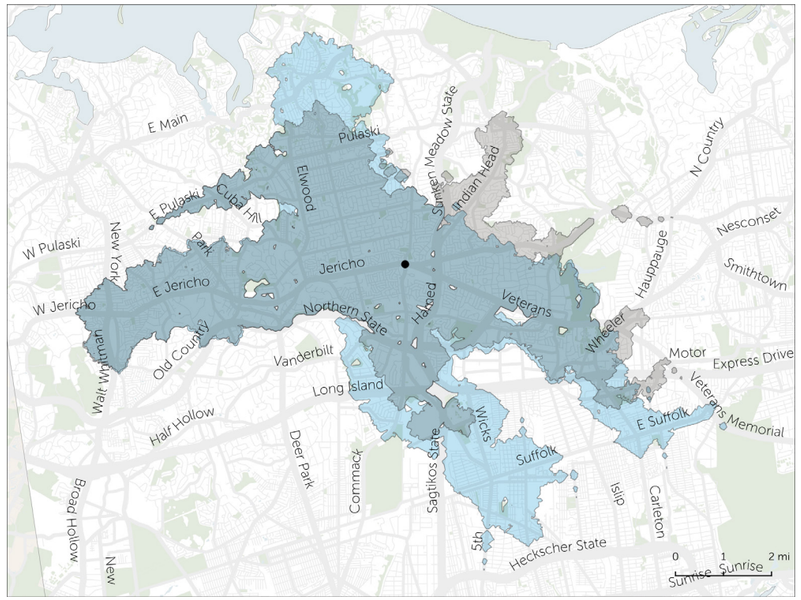
Centereach - Middle Country Rd at Mark Tree Rd
+500 Jobs (+3%), -12,500 Residents (-19%)



Cohalan Court Complex
+44,100 Jobs (+695%), +81,800 Residents (+299%)



Commack Plaza
+14,500 Jobs (+28%), +42,900 Residents (+42%)



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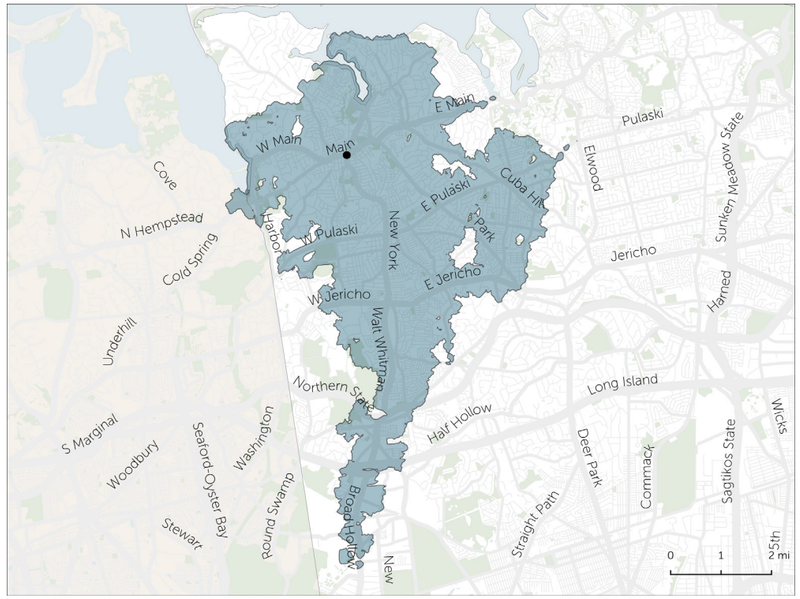
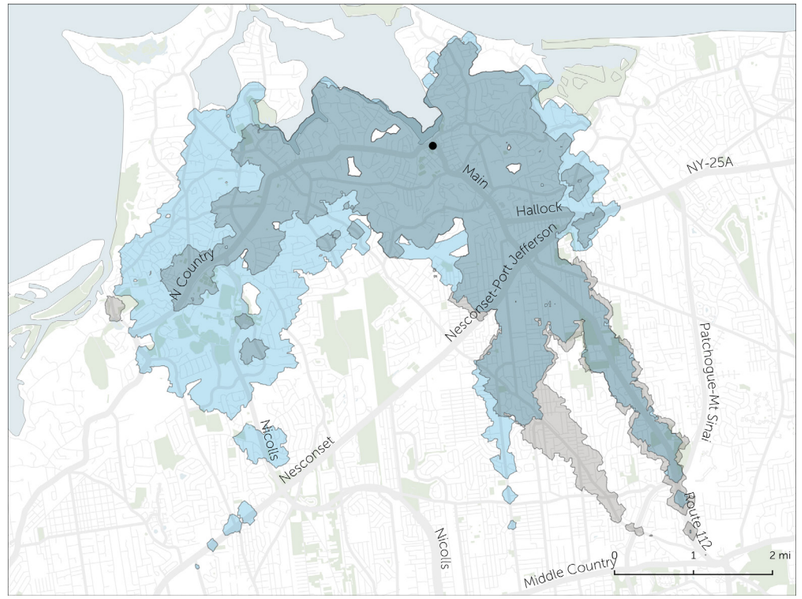
Downtown Huntington - Main St at New York Ave

+0 Jobs (0%), +0 Residents (+0%)



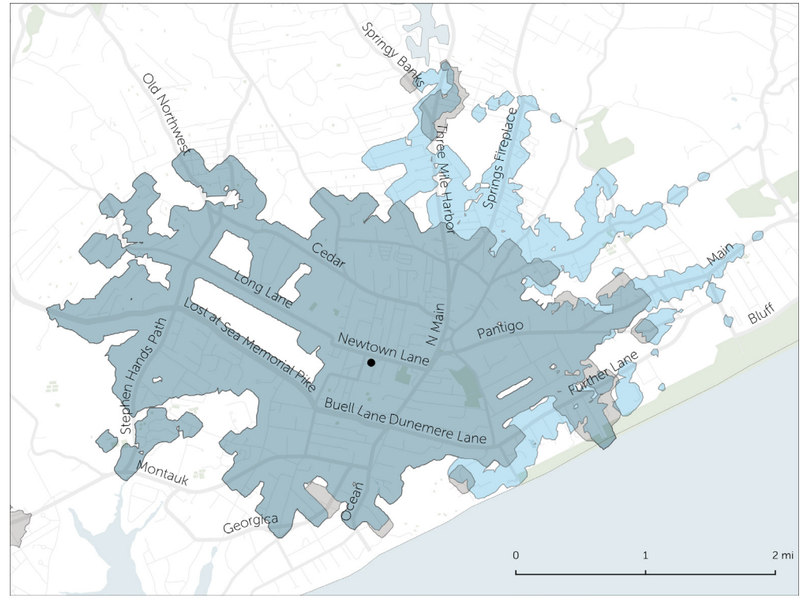
Downtown Port Jefferson - Broadway at Main St

+17,400 Jobs (+99%), +12,700 Residents (+39%)



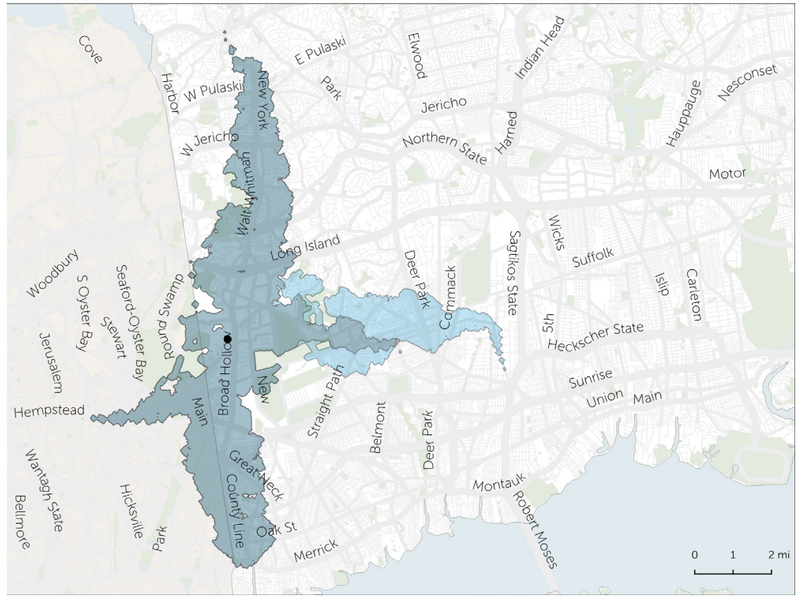
East Hampton LIRR

+300 Jobs (+10%), +800 Residents (+21%)



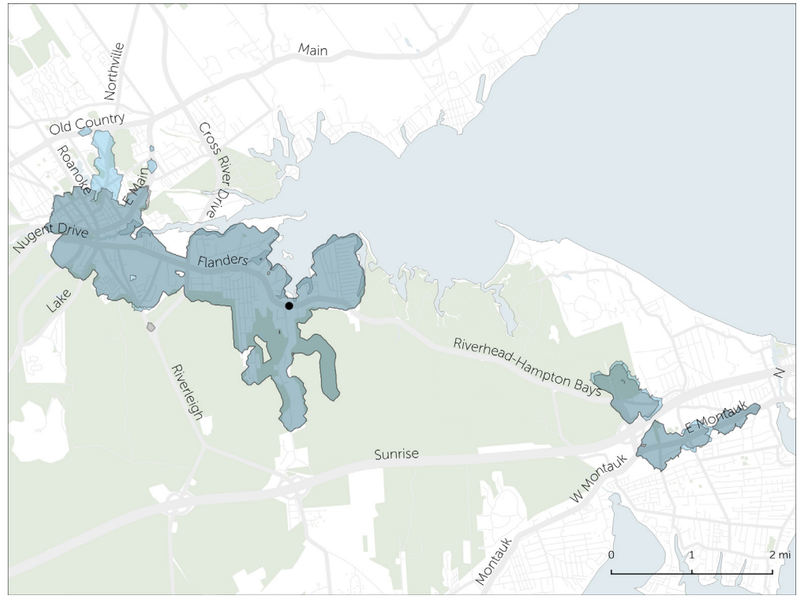
Farmingdale State College

+11,400 Jobs (+12%), +24,500 Residents (+26%)



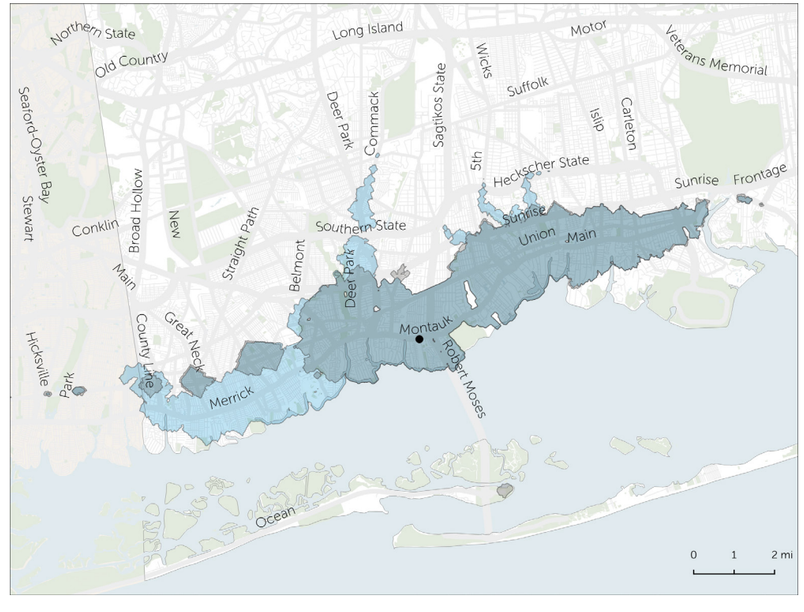
Flanders - Flanders Rd at Pleasure Dr

+200 Jobs (+9%), +700 Residents (+16%)



Good Samaritan Hospital - West Islip

+10,500 Jobs (+25%), +44,100 Residents (+52%)



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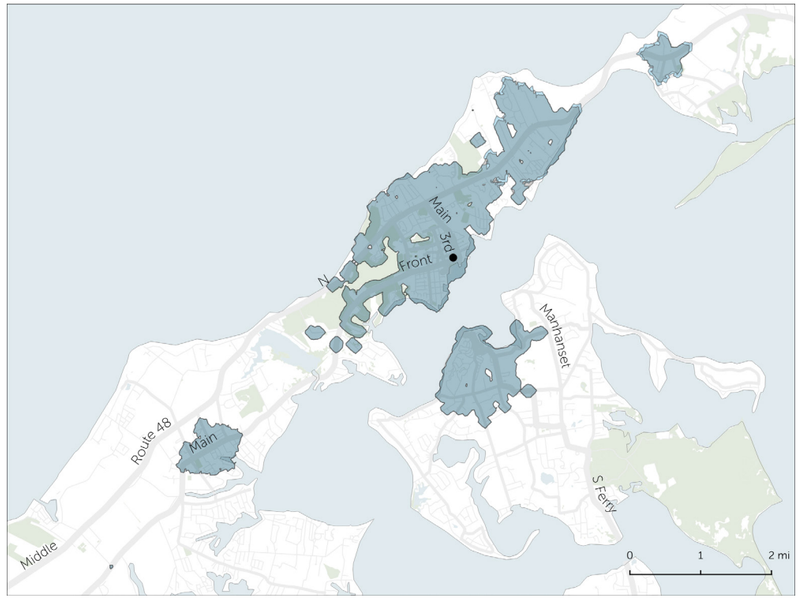
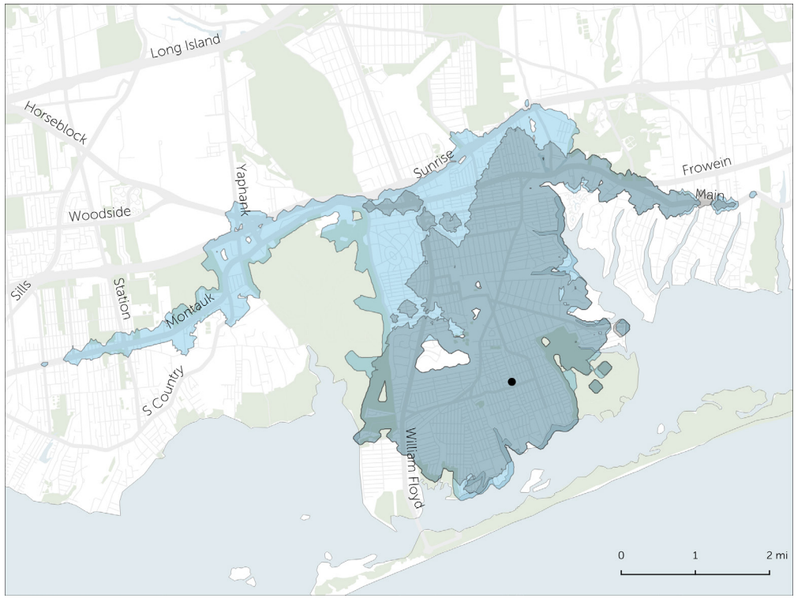
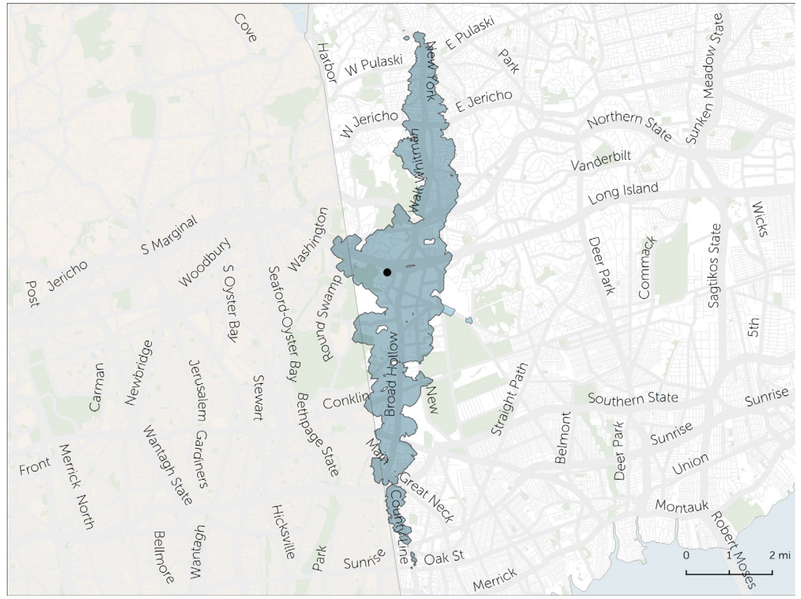
Greenport
+0 Jobs (+0%), +0 Residents (+0%)



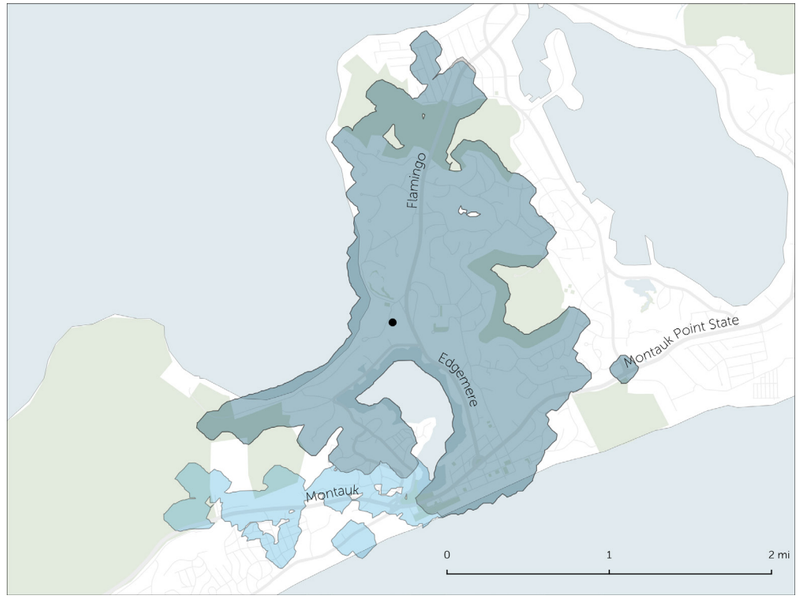
Mastic Beach - Neighborhood Rd at Jefferson Dr
+1,900 Jobs (+58%), +10,900 Residents (+35%)



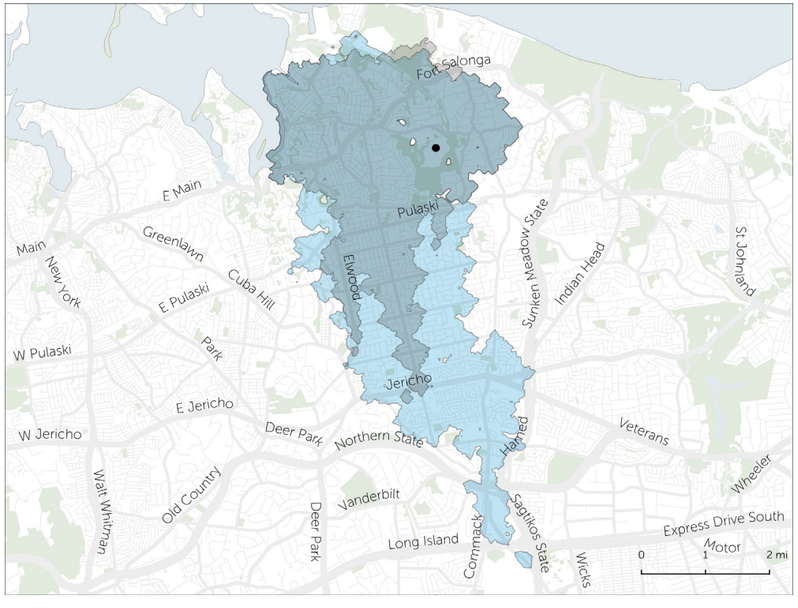
Melville - Canon Headquarters
+0 Jobs (+0%), +100 Residents (+0%)



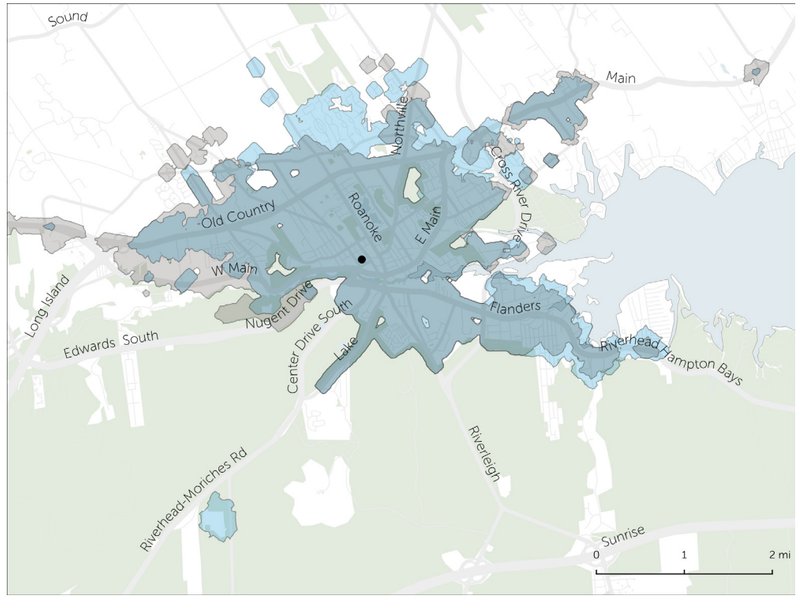
Montauk LIRR
+100 Jobs (+14%), +100 Residents (+9%)



Northport VA Medical Center
+10,700 Jobs (+122%), +20,800 Residents (+69%)



Riverhead LIRR
-600 Jobs (-7%), +0 Residents (0%)



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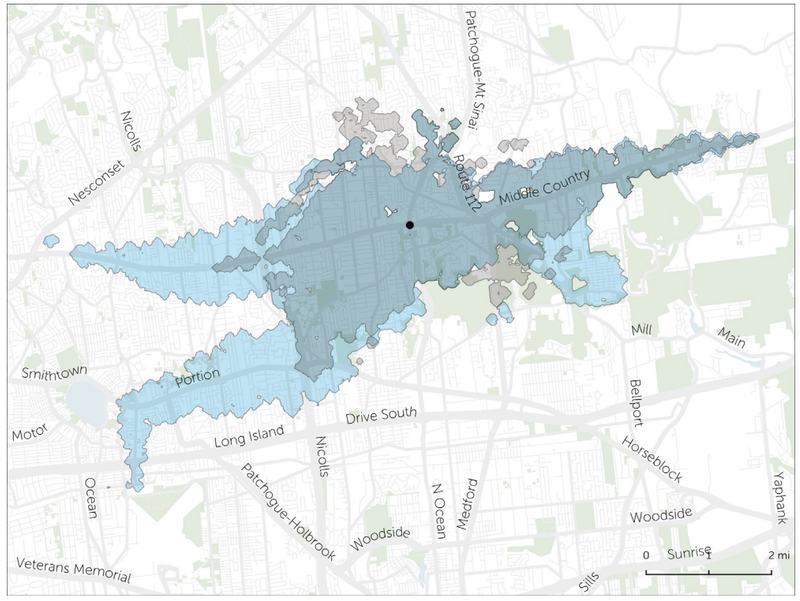
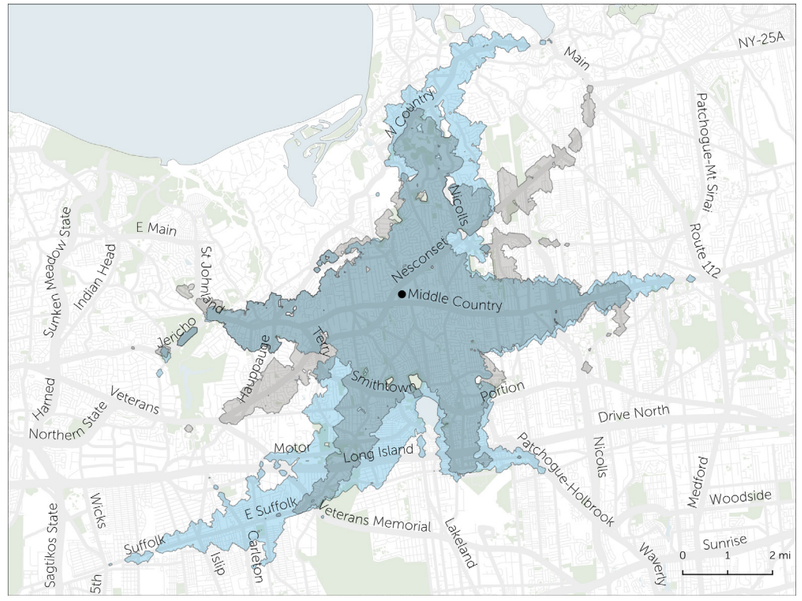
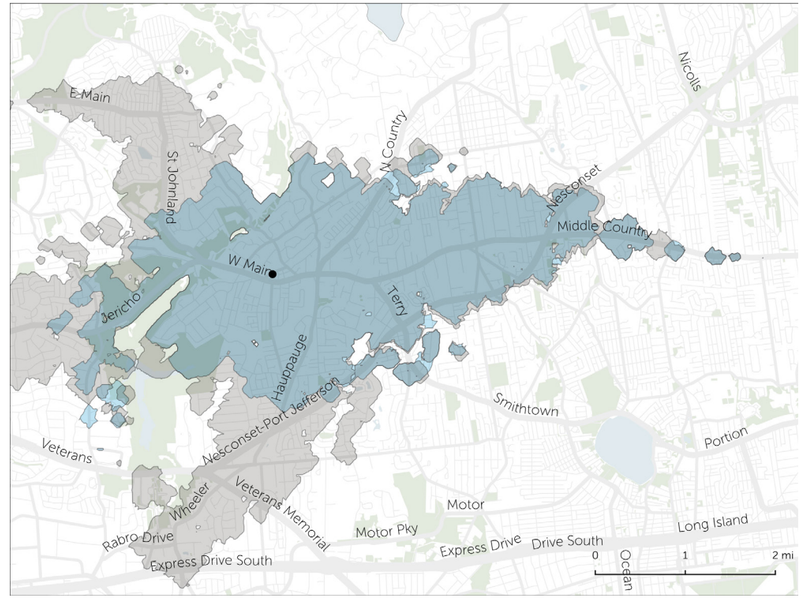
Selden - CR83 at Middle Country Rd
+5,900 Jobs (+65%), +22,100 Residents (+51%)



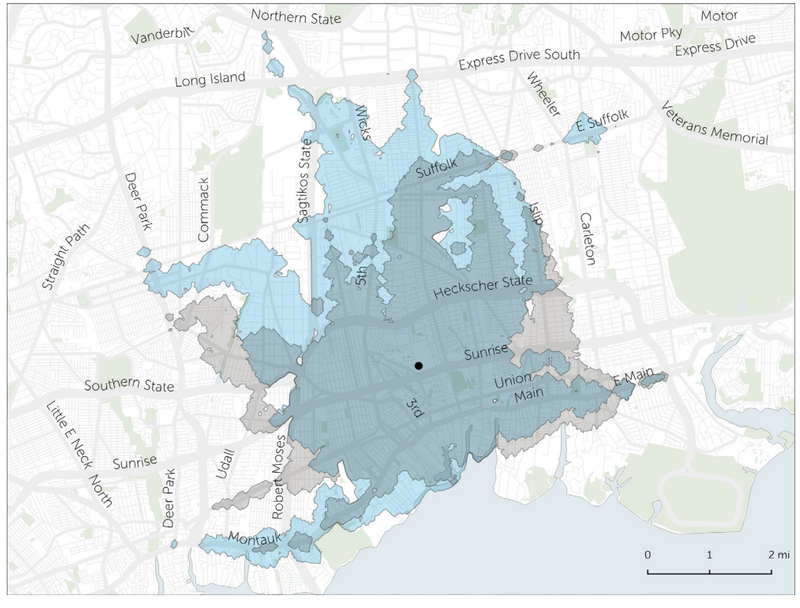
Smith Haven Mall
+9,800 Jobs (+18%), +28,300 Residents (+29%)



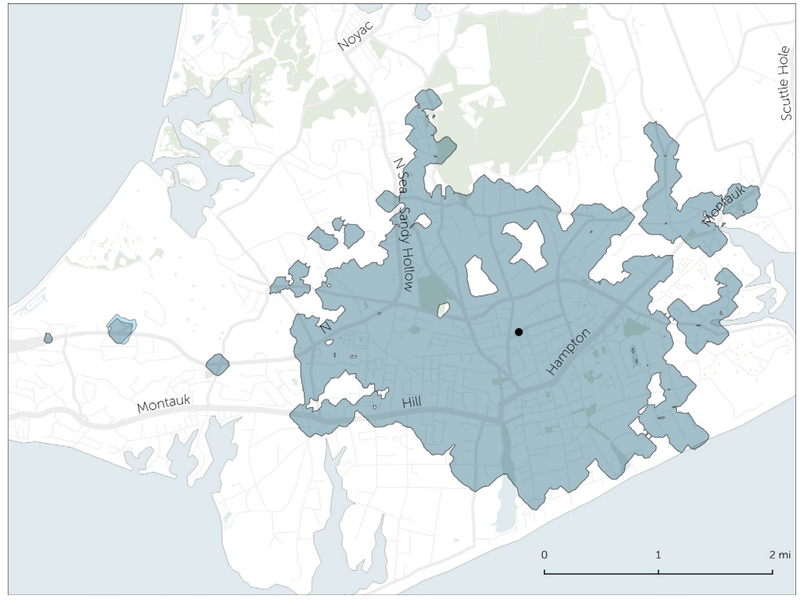
Smithtown LIRR
-10,600 Jobs (-40%), -23,100 Residents (-50%)



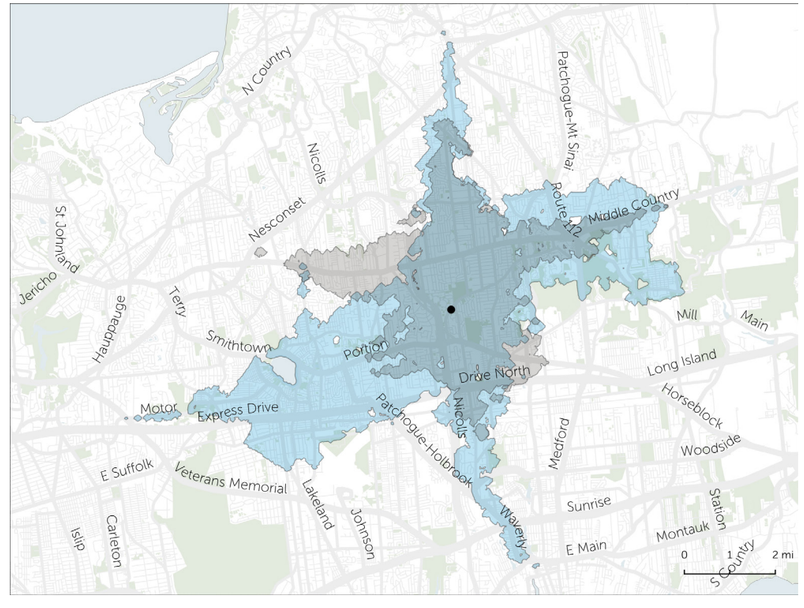
South Shore Mall (Westfield South Shore)
+16,000 Jobs (+55%), +34,100 Residents (+33%)



Southampton LIRR
+0 Jobs (+0%), +0 Residents (+0%)



Suffolk County Community College - Ammerman Campus
+13,900 Jobs (+89%), +54,200 Residents (+90%)



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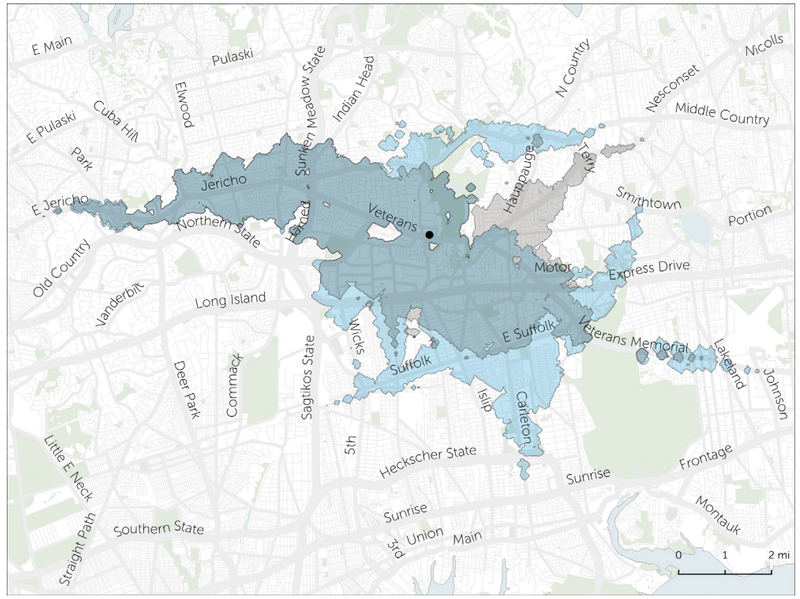
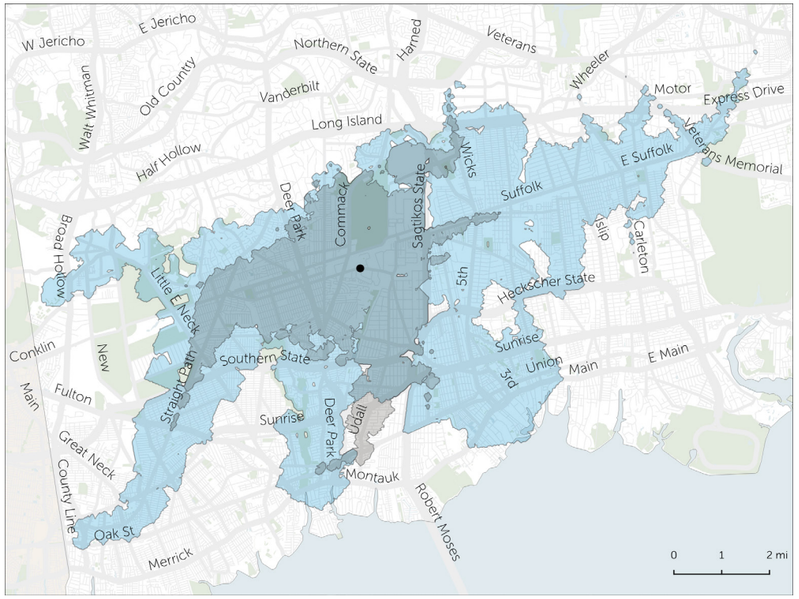
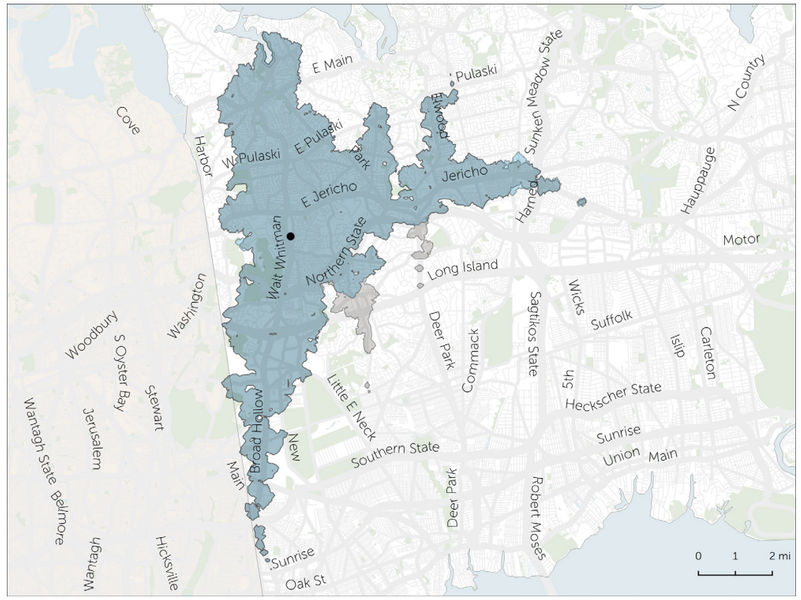
Suffolk County Offices at Hauppauge
+14,800 Jobs (+25%), +32,500 Residents (+53%)



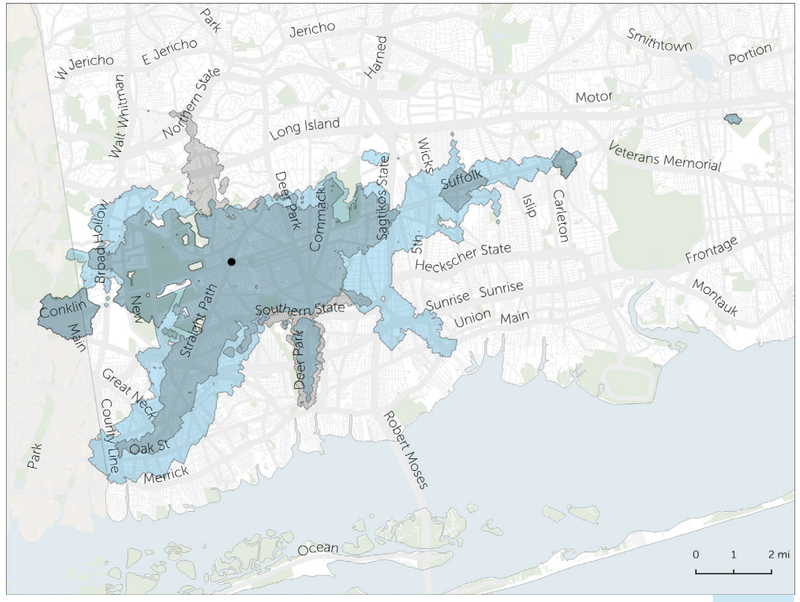
Tanger Outlets Deer Park
+77,000 Jobs (+249%), +187,200 Residents (+270%)



Walt Whitman Shops
-400 Jobs (0%), -1,300 Residents (-1%)



Wyandanch LIRR
+43,500 Jobs (+63%), +83,400 Residents (+70%)



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