



Transit Choices & Concepts Report

CHICO-OROVILLE BUS NETWORK STUDY

SUMMER 2026

Butte County Association of Governments (BCAG)

Prepared for



Prepared by

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1

Introduction and Executive Summary

What is the Chico-Oroville Bus Network Study?

The Chico-Oroville Bus Network Study asks: is B-Line’s local bus service in Chico and Oroville working as well as it could? This study examines where routes go, when they run, and how well they serve the people who depend on them.

Regional routes outside of Route 20 are not covered under this study.

This study is a joint effort among B-Line, the cities of Chico and Oroville, the Butte County Association of Governments (BCAG), Chico State University, transit stakeholders, and community members. Together, they are working to define what B-Line’s local routes should accomplish and who they should serve.

Project Timeline

Existing Conditions Review

In early 2026, B-Line and the project team did an internal assessment of the current Chico and Oroville B-Line services along with the transit demand and needs in each community.

Developing Network Concepts

In May 2026, based on the findings from the Existing Conditions Review, the project team and B-Line collaborated with key government stakeholders (Chico and Oroville City staff and elected officials, Butte County representatives, and Chico State University) to create contrasting Network Concepts aimed at framing the main transit options for each community.

Choices and Concepts Report

The developed Network Concepts and the Existing Conditions review that informed their creation are presented in this report for community feedback and review.

Phase 1 Public Outreach

Public input is being collected on these Network Concepts during this initial phase of outreach. A mix of in-person and online surveys will gather input from each community and stakeholders, which will directly guide the next project phase.

Draft Network Plan

After gathering public responses on these Network Concepts, the team will present the findings to the BCAG Board for guidance on how to develop draft plans for each local network (Chico and Oroville).

Once direction is given, the project team, along with the same government stakeholders, will convene to create individual draft plans for both Chico and Oroville’s local transit networks. These plans will detail routes, frequencies, hours, and days of service for the future B-Line networks.

Phase 2 Public Outreach

During the second phase of public outreach, we

will present the individual draft network plans for each city back to the public. Communities and key stakeholders will have the opportunity to respond and comment on the specific recommendations.

Final Network Plan

The final network plans for Chico and Oroville’s local bus systems will be developed by incorporating feedback collected during Phase 2 of Public Outreach. Working again with the project team and government stakeholders, final networks will be created to guide how transit will operate in each community moving forward.

Final implementation of each network may require additional time or other preparations, but these final networks will define the future systems that B-Line will strive to implement in Chico and Oroville.

Services included in this project:

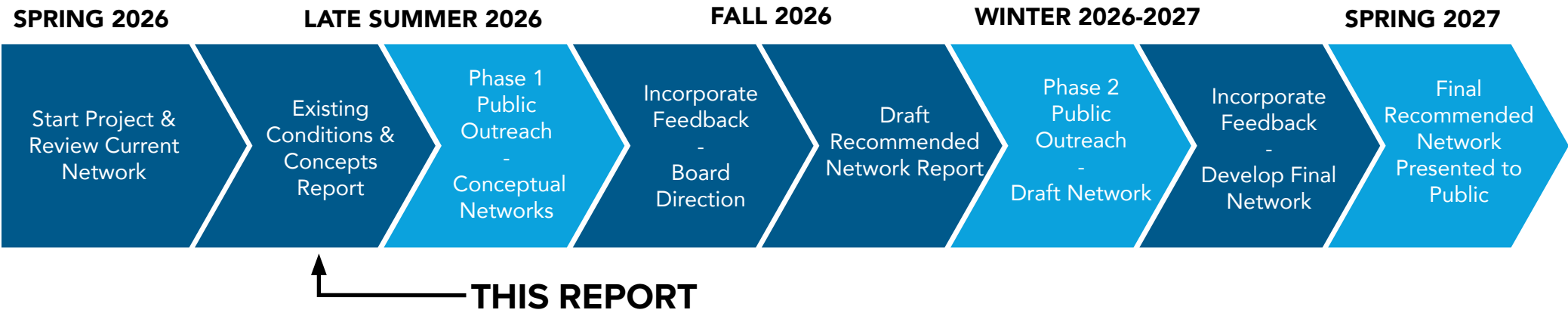
- Local Chico Routes
- Local Oroville Routes
- Route 20 connecting Chico and Oroville

Outside the scope of this project:

These have separate planning processes.

- Service to Paradise and Magalia
- Service to Briggs and Gridley
- Paratransit Services

Figure 1: Project timeline for the Chico-Oroville Bus Network Study, Spring 2026 to Spring 2027. This report marks the current phase, Phase 1 Public Outreach, where the public is invited to weigh in on the two conceptual networks before a recommended network is developed.



What is a transit system?

What is a transit system?

Transit is often referred to as a “system” because it is a combination of many parts, working together. The graphic below describes what makes a transit system.

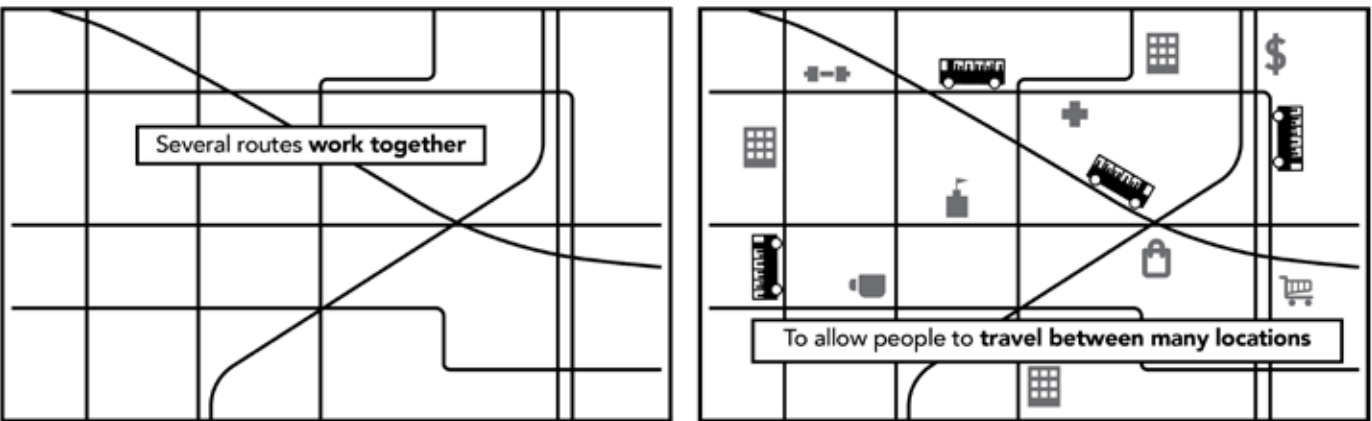
For B-Line, the system is made of:

- Local Chico buses and Local Oroville buses.
- Route 20 connecting Chico to Oroville.
- Regional buses linking Chico and Oroville to the other cities in the county.
- FLEX Zones (or on-demand service), providing requested curb-to-curb trips within zones.
- Paratransit service.

A transit system is...



A transit network forms when...



Transit’s Many Goals

Public transit can serve many goals, but different people and communities value these goals differently. Understanding which goals matter most in the region is a key step in designing future B-Line service.

Possible goals for transit include:



Economic: Transit can give businesses access to more workers, and workers access to more jobs, and give students more access to education and training.



Congestion: Transit can allow for continued economic growth beyond what congestion would limit. High transit ridership can also reduce some of the impacts of cars, such as noise, air pollution, death, injury and heat.



Climate: High transit use can reduce greenhouse gas emissions and air pollution generated by internal combustion engines.



Social: Transit can meet the needs of people who are in situations of disadvantage, providing access to services and jobs. It can also promote equity and inclusion across society.



Health: Transit can support physical activity by walking and biking. It can also improve health by bringing health care, services and food within reach for disadvantaged people.



Personal Liberty: By providing people the ability to reach more places, transit can be a tool for personal liberty, empowering people to make choices and pursue their own goals.

Some of these goals are only served if many people use transit. For example, transit can only mitigate congestion and pollution if many people ride the bus rather than drive. These are “Ridership Goals,” because a community only makes progress towards them if ridership is high.

Other goals are served by the simple availability of transit. A bus route through a neighborhood provides residents insurance against isolation. A route may fulfill political or social obligations, for example by getting service close to every taxpayer or into every district. A route may serve a small number of people, but deliver huge benefits in their lives. None of these routes are attracting high ridership, but high ridership isn’t transit’s only goal.

Recent B-Line Trends

Why conduct this study now?

Between the years 2015 and 2024, B-Line has delivered a fairly consistent amount of service, with only minor year-to-year fluctuations.

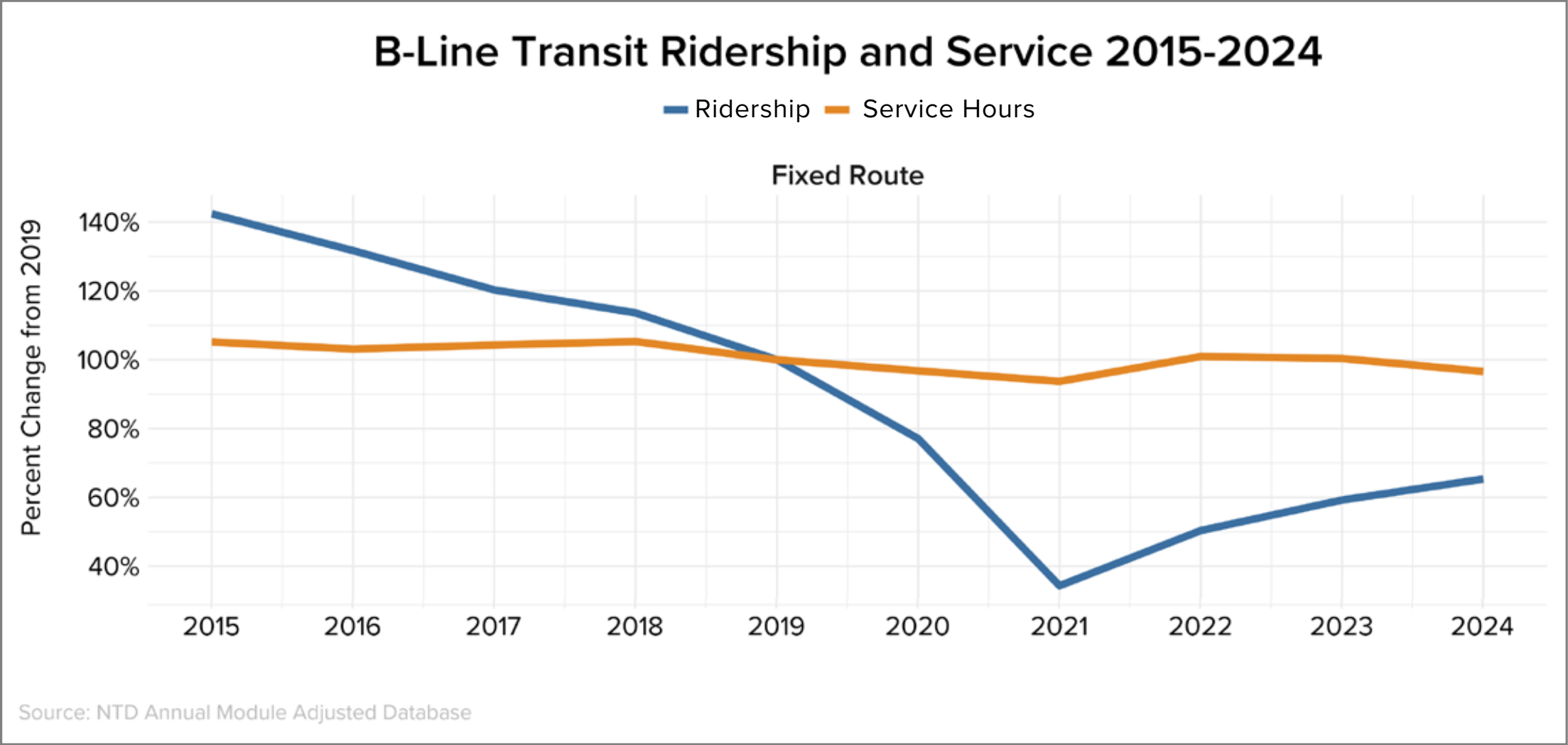
The total quantity of service being offered is measured in an agency's total service hours. A service hour is one bus operating in service (open to passengers) for one hour. Because operating cost varies mostly with time rather than distance, focusing on service hours is the best way to view, analyze, and compare service quantity between different transit agencies across various regions, or in the same agency over periods of time.

Over this time frame, ridership was on a downward trend from 2015 to 2019. Then, ridership dropped sharply between 2019 and 2021, largely due to the economic and social impacts of COVID-19. This trend was common nationwide, as transit agencies faced strict social distancing and health protocols.

Since that period, ridership has been gradually improving, although total service hours have remained steady. This pattern is typical of many comparable transit agencies.

In considering whether ridership is good or bad, it is important to note that travel demand has changed in profound ways, especially due to working from home. It may not be realistic to expect ridership to return to 2019 levels. However, it is definitely time to review the network and see if the service design can be improved to better match current goals and demand.

Figure 2: B-Line fixed-route ridership and service hours, 2015–2024, indexed to 2019. Ridership (blue) peaked before 2019, dropped sharply in 2020, and has been recovering slowly since. Service hours (orange) have remained relatively stable throughout. Source: NTD Annual Module Adjusted Database.



Performance Compared to Peers

The charts starting on this page show the performance of the B-Line bus system in 2024, compared to systems with a similar population.

Peer cities were selected to match Butte County, Chico, and Oroville in population, development pattern, and transit scale. However, the comparison is never perfect, and peers should not be used to imply that better outcomes elsewhere are achievable here without accounting for local context.

Investment

Investment measures the quantity of service relative to the population being served, specifically vehicle service hours per capita.

A vehicle service hour is one bus operating for one hour. Dividing total service hours by population tells us how much service each resident effectively receives.

B-Line provides about 0.39 service hours per capita, which puts it in the middle of its peer group, tied with Turlock and Santa Maria. Wenatchee provides a notably higher level of investment, while Redding and Marysville provide less.

Relevance

Relevance can represent how much transit figures into daily life by showing how many transit trips per capita are happening in each city.

Relevance divides total boardings (passenger trips) by the service area population.

With a few exceptions, relevance tracks closely with investment, indicating that most agencies are getting what they pay for. Merced and Turlock both have higher relevance than B-Line, while Santa Maria, Marysville, and Redding have lower relevance.

Figure 3: Comparing service investment between B-Line and comparable agencies. Service investment is calculated by dividing the total fixed-route vehicle service hours in operation by the population of the service area for each agency.

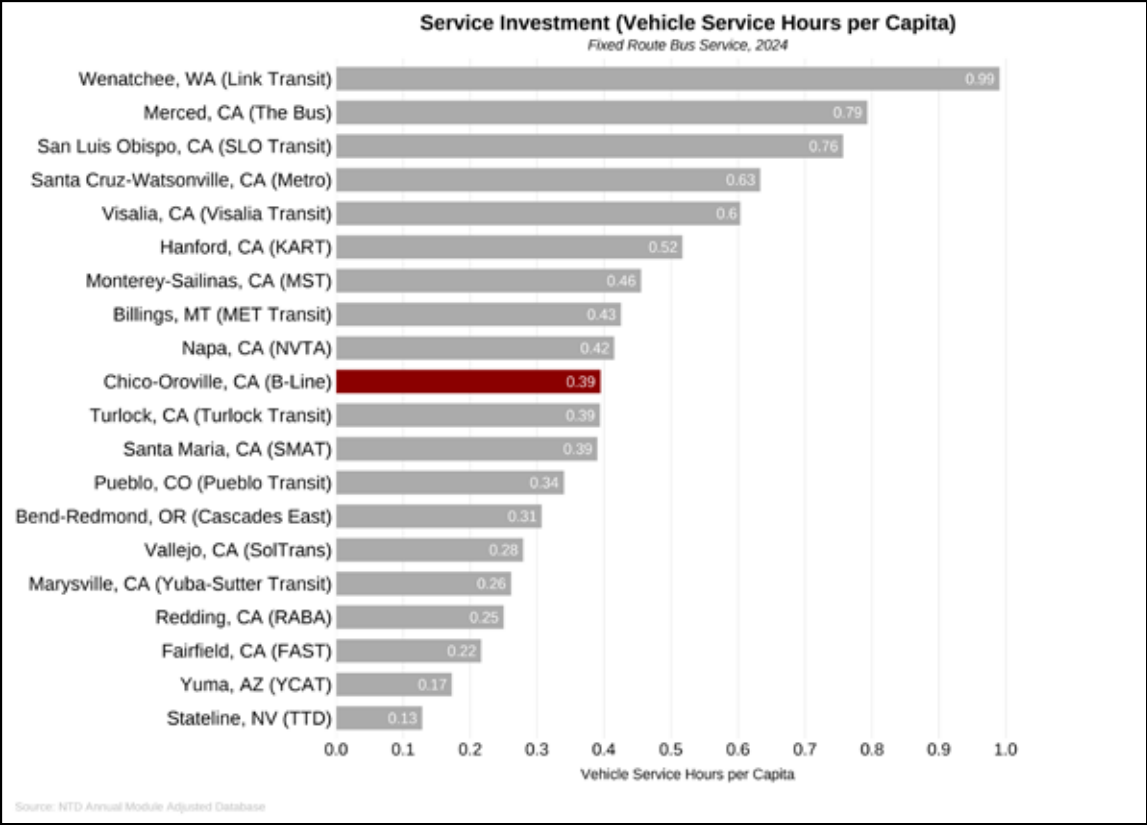
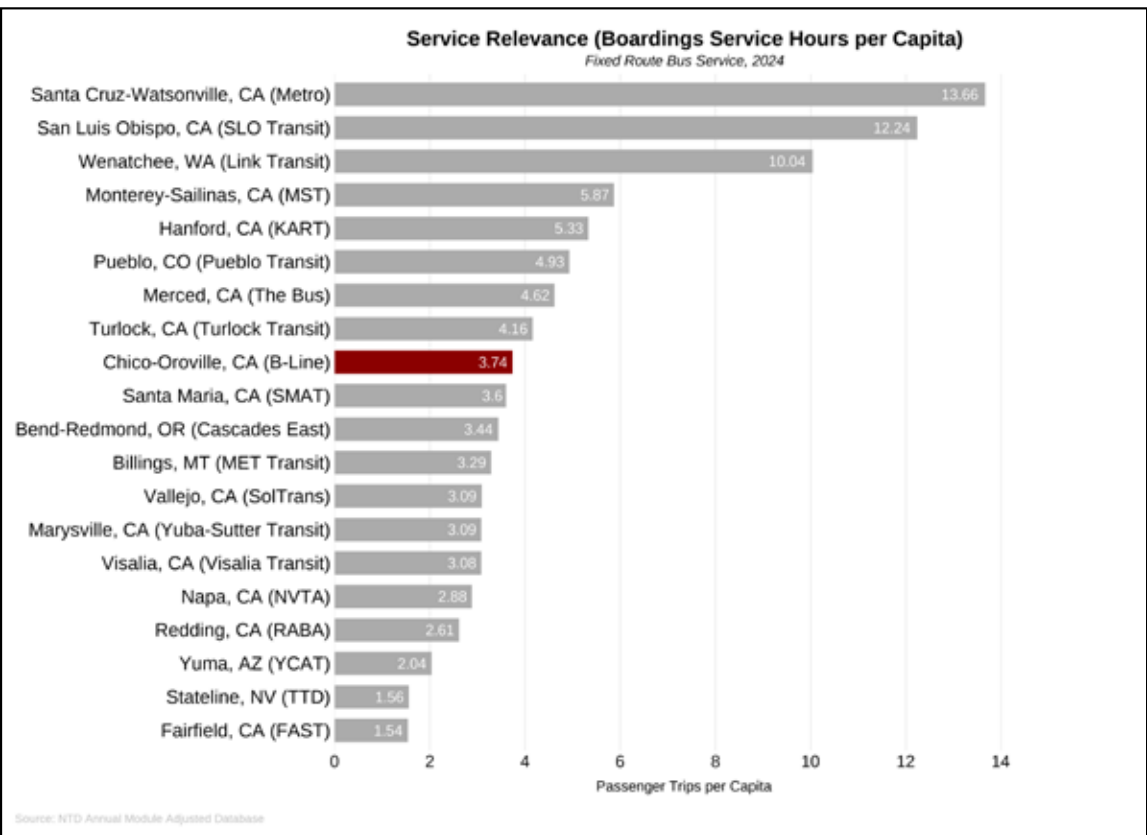


Figure 4: Evaluating Service Relevance between B-Line and comparable agencies. Service relevance is calculated by dividing the total number of passenger trips (or boardings) by the population within the service area for each agency.



Performance Compared to Peers

Productivity

People who value the environmental, business, or development benefits of transit will talk about ridership as the key to meeting their goals. However, the measure they should be tracking is not sheer ridership but ridership relative to cost.

Ridership relative to cost is called “productivity.” In this report, productivity is measured as boardings per service hour (a service hour is one bus operating in service (open to passengers) for one hour):

$$\text{Productivity} = \frac{\text{Ridership}}{\text{Cost}} = \frac{\text{Boardings}}{\text{Service Hours}}$$

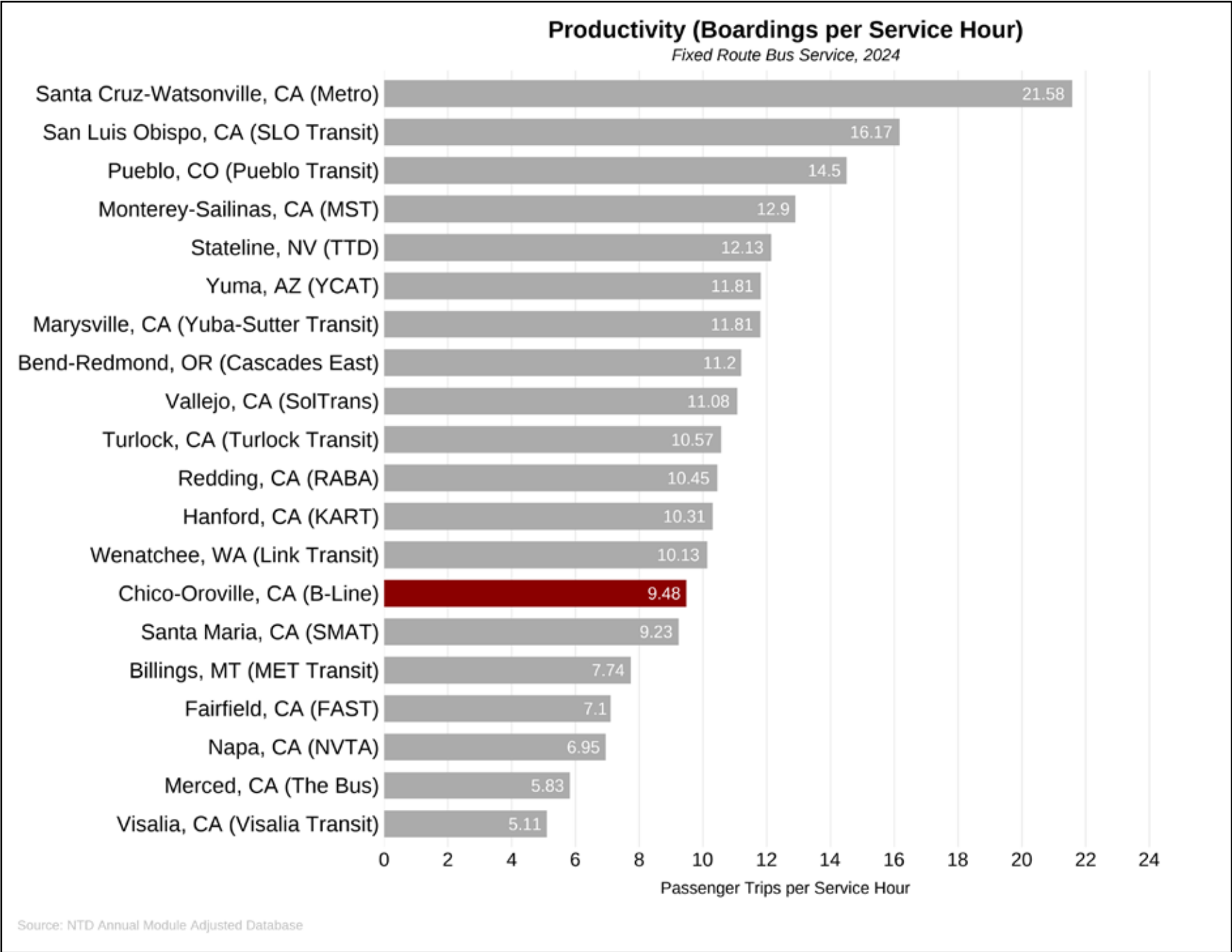
B-Line’s productivity, at 9.48 boardings per service hour, ranks in the bottom half of its peer group. This may reflect land use patterns that make ridership harder to achieve, or it may reflect a network designed around coverage rather than ridership.

The demand and needs analysis in the next chapter helps clarify which explanation better fits Chico and Oroville.

IF ridership is the primary goal, B-Line should aim to increase productivity.

IF coverage is the primary goal, B-Line should expect to see a decrease in productivity, which is not a failure but an expected result.

Figure 5: Assessing service efficiency between B-Line and similar agencies. Efficiency is calculated by dividing the total number of passenger boardings by the total service hours. This metric enables quick comparison across transit agencies.



Key Choice Illustrated by Concepts

Certain issues come up in transit planning that aren't technical problems and don't have definitively correct answers. These are better viewed as choices rather than questions.

Reasonable individuals can and will have differing opinions about the best options for Chico and Oroville.

One goal of this process is to encourage a constructive discussion about these choices so that people understand what to expect from the B-Line service going forward and why the network cannot fulfill every desire.

More Ridership or More Coverage?

Every transit agency balances **two competing priorities** for their system:

- **Maximizing system ridership and**
- **Expanding coverage to the most people.**

This trade-off is demonstrated using a fictional neighborhood on the right. The small dots represent homes and workplaces. The lines represent roads. As in many neighborhoods, most activity is focused along the main roads.

A transit agency focused solely on maximizing ridership would concentrate service on the main roads, which are linear and densely populated with residents and jobs. Routes would be frequent and direct but only available in the busiest areas, as shown in the red network.

If the same agency aimed only for coverage, it would distribute buses across many routes so that every street had some service, as illustrated by the green network. Everyone would have a nearby route, but none would be frequent or direct, even in the busiest zones.

These two scenarios use the same number of buses and cost the same to operate, but they produce very different results.

The “right” balance between ridership and coverage goals varies in every community. It can also shift over time as the values, needs, and goals of a community evolve.

The choice between these goals is not an either-or situation. Most transit providers allocate part of their service budget to maximizing ridership and the rest to providing coverage. You don't have to choose just one goal to pursue.

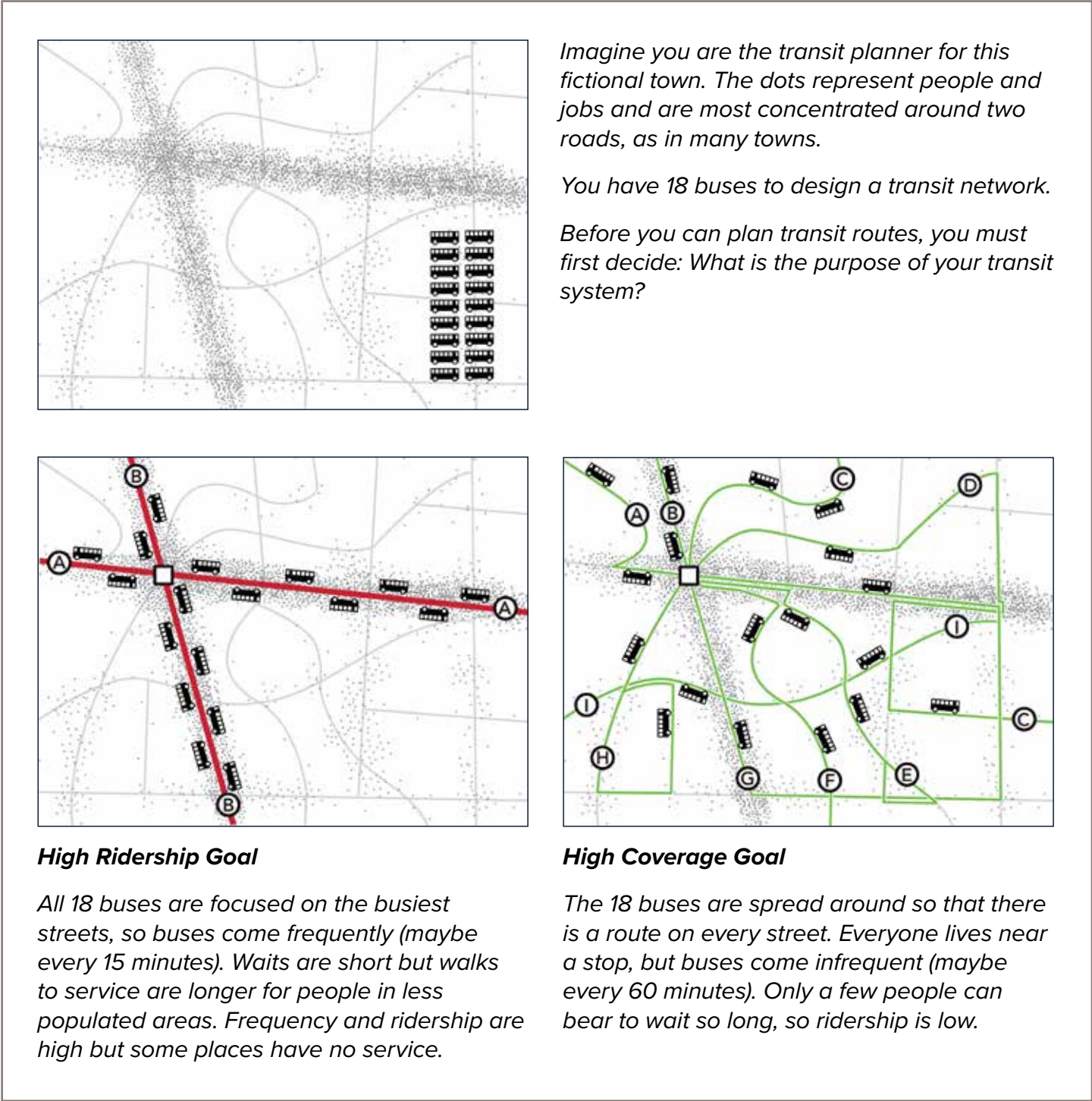
However, every transit provider finds a specific balance between these two goals somewhere along the spectrum between the extremes.

B-Line can dedicate some service to each goal, but...

Within any limited budget, if an agency wants to increase one of these goals, it must reduce the other. For example, if B-Line is asked to be more “efficient” by attracting more riders, it can boost frequencies (or extend service hours) in areas with the highest potential ridership. This will likely increase ridership. But doing so would require cutting service elsewhere or at other times, reducing their ability to provide coverage to the most amount of people.

The scenarios outlined in this report depict what transit in Chico and Oroville might look like at the far ends of the ridership-coverage spectrum. Neither extreme is expected to be the ideal solution; the right balance is one that mirrors the community's values. This study is requesting your help to decide on that balance.

Figure 6: The Ridership / Coverage Trade-off: Abstract Example for Local Service



Concepts Summary

Network Concepts

This report introduces Conceptual Networks that illustrate a range of possibilities for the future B-Line local bus networks operating in Chico and in Oroville.

During the phase of public engagement based on this report, the question for the public is,

“Where on the spectrum between these two Concepts should the future local B-Line bus service be?”

The maps at right are snapshots of Current Service, Coverage Concepts, and Ridership Concepts for Chico and Oroville’s local service.

Different Purposes

The Concepts were designed to be very different from each other.

The **Ridership Concepts** are designed to:

- Put the largest number of people within reach of frequent, useful transit.
- Focus service on the areas with the most residents, the most jobs, and the most vulnerable people.
- Use routes that are direct and efficient to operate given Chico and Oroville’s layout.

The **Ridership Concepts** are **not** designed to:

- Continue legacy patterns of service simply because they have always existed.
- Serve all new development automatically.
- Spread a little service across as many places as possible, that goal conflicts directly with high ridership.

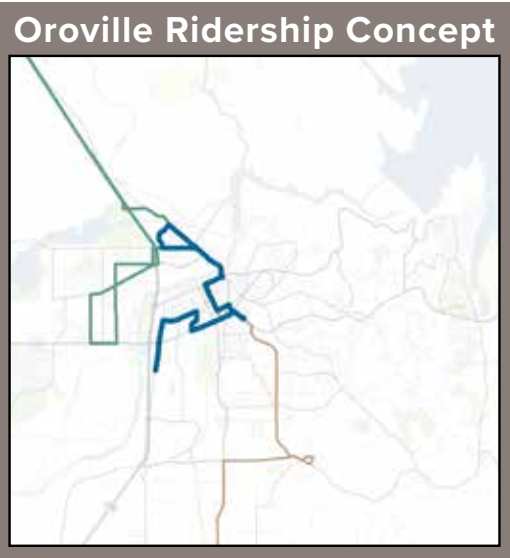
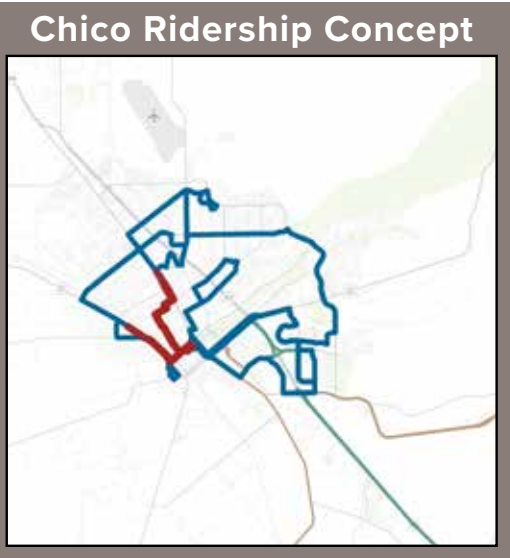
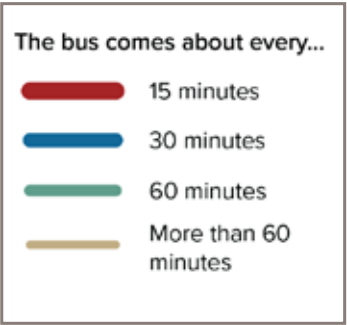
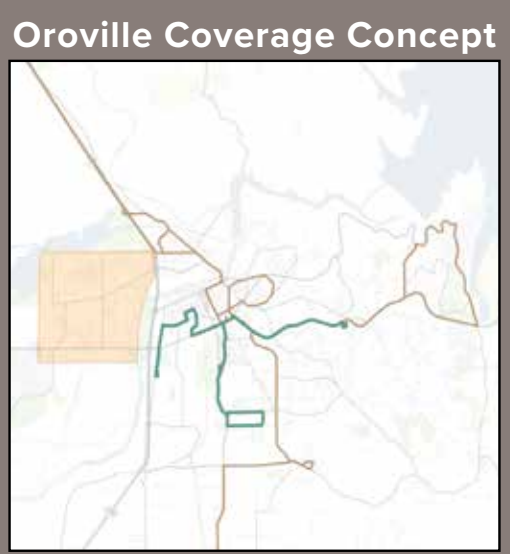
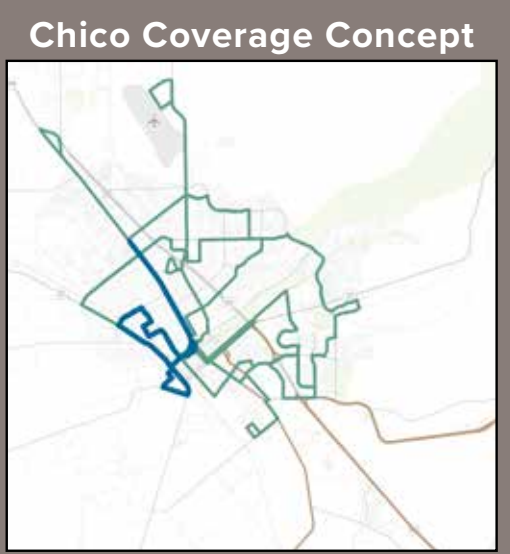
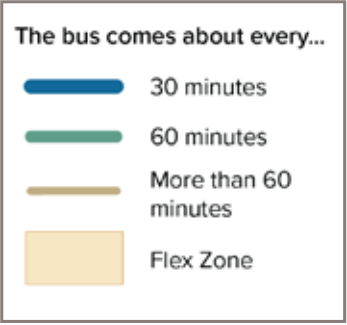
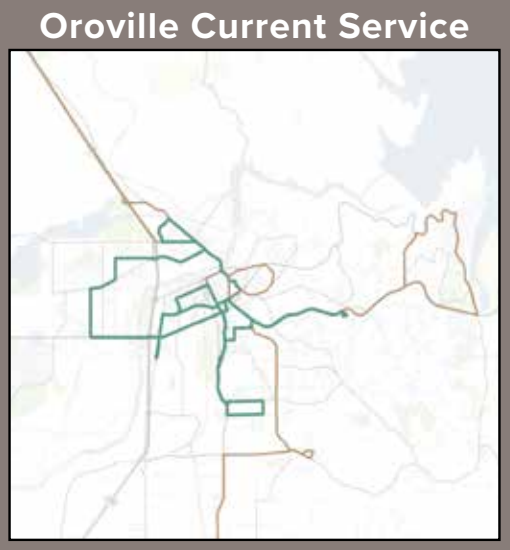
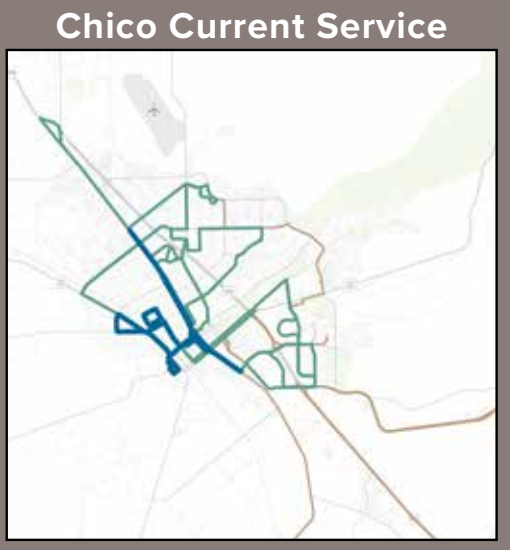
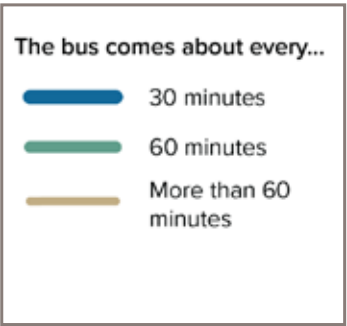
The **Coverage Concepts** are designed to:

- Maintain at least minimal service in every area currently served.
- Put service within reach of as many people as possible, even if buses run infrequently.
- Extend some minimal service to newly developed areas.
- Function as a connected network despite operating mostly at low frequencies.

The **Coverage Concepts** are **not** designed to:

- Attract high ridership relative to operating costs.
- Reduce driving or traffic congestion.
- Maintain today’s frequencies everywhere, some must be reduced to extend coverage further.

More detailed maps of the concepts appear in Chapter 5 of this report.



Concepts Outcomes

The two concepts produce very different results for residents of Chico and Oroville. Understanding both measures below, **access to opportunities** and **proximity to transit**, is important, because they tell different parts of the same story.

The Coverage Concept reaches more people. More residents live within a half-mile of a stop. But those stops serve less frequent routes, which means the jobs and destinations reachable within a given travel time are fewer.

The Ridership Concept reaches fewer people overall, but the people it does reach gain access to dramatically more jobs, because frequent service means shorter waits and more destinations become reachable within the same amount of time.

This is the core trade-off this study is asking the community to weigh.

Figure 7: These two charts illustrate the overall change in job accessibility within a 45-minutes travel time for Chico and Oroville. Both scenarios show improvements in job access, but the Ridership Concepts result in substantially higher increases in 45 minutes of travel.



Access to Opportunity

Access to jobs is a good predictor of transit ridership. Job locations tend to be destinations for other trips such as socializing, shopping, medical appointments and errands. Access analysis answers the basic question:

“Can I get to the various places I want to go, in a reasonable amount of time?”

The two charts below compare job access on a weekday at midday for Chico and Oroville.

- **In Chico, Access to jobs within 45-minutes would increase slightly by +3% under the Coverage Concept and significantly by +84% in the Ridership Concept.**
- **In Oroville, Access to jobs within 45-minutes would increase by +7% in the Coverage Concept and significantly by +52% in the Ridership Concept.**

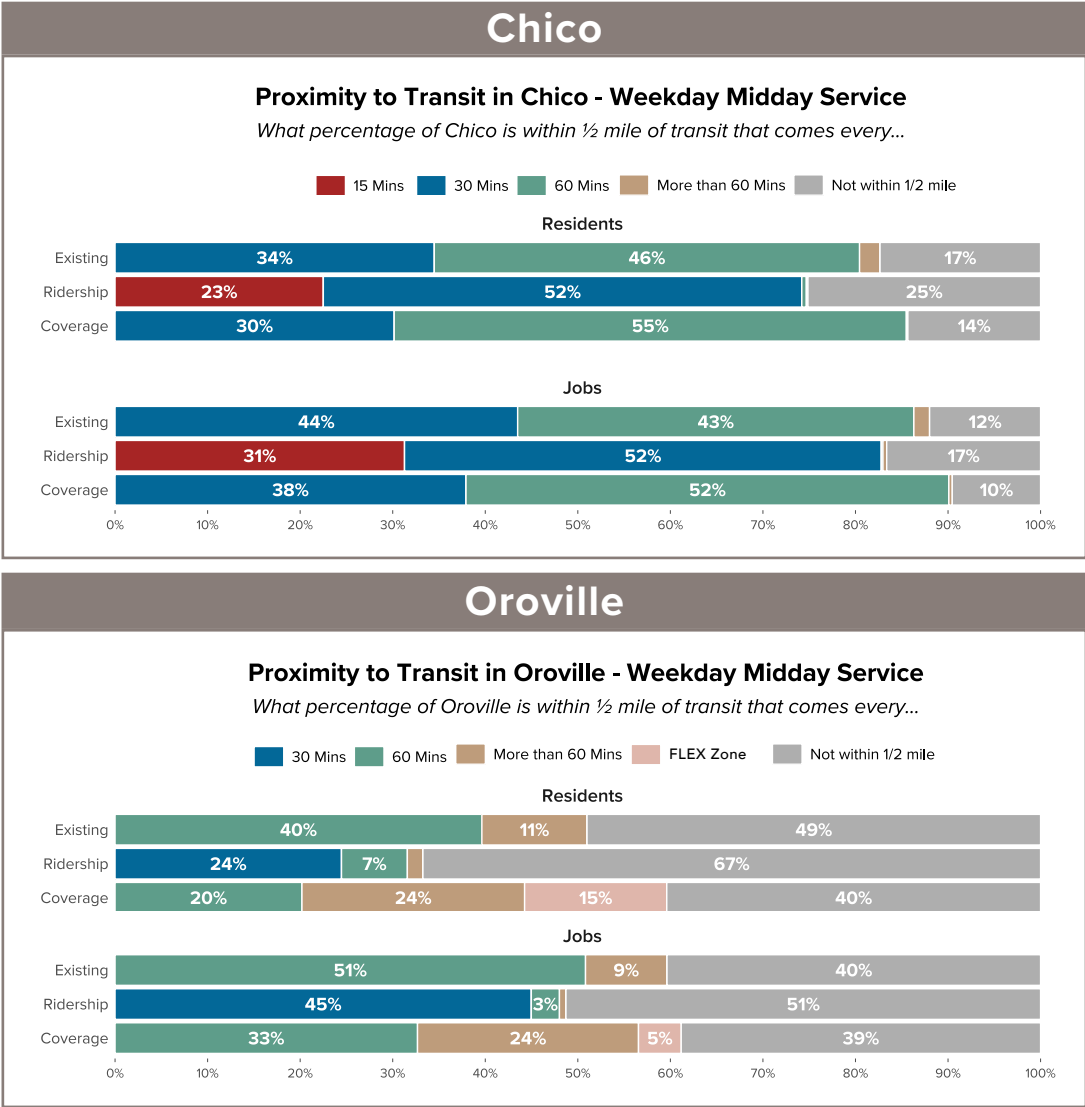
Proximity to Transit

The mere presence of transit provides some lifeline mobility, even if most people don’t use it or use it only rarely.

In Chico, the Coverage Concept would get at least minimal transit close to more residents than the Ridership Concept – 86% compared to 75%.

In Oroville, the Coverage Concept would get at least minimal transit close to more residents than the Ridership Concept – 60% compared to 33%.

Figure 8: The two bar charts below illustrate the overall change in the total number of residents and jobs within a 1/2 mile (about a 10-minute walk) of a bus stop between the Existing Network, the Ridership Concepts, and the Coverage Concepts for Chico and Oroville.



What is in this report?

Current Conditions

Section 2: The Geometry of Transit

What makes a transit network useful? This section explains the basic trade-off between designing for high ridership and designing for wide coverage, and why no network can fully achieve both with a fixed budget.

Section 3: Demand and Needs

Where do people live, work, and travel in Chico and Oroville? This section maps residential and job density, travel patterns, and the populations who may benefit from transit most.

Section 4: B-Line’s Existing Network

A look at how today’s Chico and Oroville bus networks operate: where service runs, when it runs, how riders currently use it, and how each route performs.

Network Concepts

Section 5: Introducing the Concepts

A high-level overview of the two concepts developed for this study: the Coverage Concept and the Ridership Concept.

If you are interested in the high-level overview of each concept, this is where you should start.

Section 6: Comparing Concept Proximity Outcomes

How would each concept change who lives near a bus stop? This section compares both concepts against today’s network.

Section 7: Comparing Concept Access to Opportunity Outcomes

How would each concept change the number of opportunities and destinations people could reach? This section compares both concepts against today’s network.

Next Steps

Section 8: What Do You Think and Next Steps

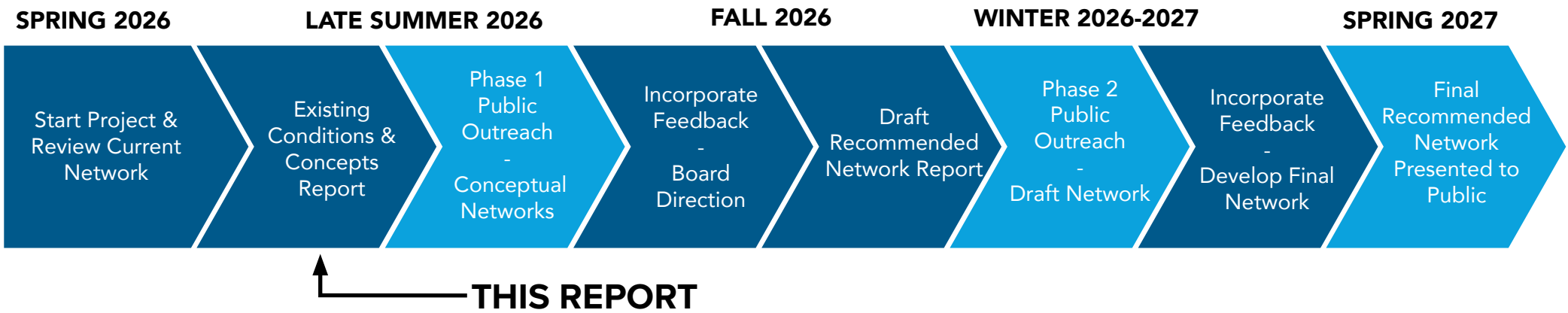
How to share your feedback on these concepts, and what happens next in the study process.

These Network Concepts Are Not Final.

These conceptual bus networks are not final versions. They are designed to illustrate what could be possible at either end of the ridership-coverage spectrum so that the public, local officials, and B-Line staff can collaborate to determine where the future network should be positioned.

Your input on these concepts will directly influence the Draft Recommended Network later this year. See timeline to the right for project next steps.

Figure 9: This project timeline outlines the forthcoming phases in this extensive Network Study. Two key phases of Public Outreach will help gather feedback and input from the community to help direct and guide the draft and final networks that will be developed over the next year.





2

The Geometry of Transit and the Ridership-Coverage Trade-off

What is the product of transit? Access to Opportunity

Public transit can achieve many goals, but a commonly held goal 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 only spend so much time traveling to meet their needs. We can measure how well transit meets this goal by calculating the number of destinations people can reach in a limited amount of time.

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 other trips people might want to make by transit.
- We increase ridership potential, as a result of service being more useful. When transit is more useful, more people use it.
- 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 urban area. Connecting people with opportunities is the whole point of cities, so improving those connections makes any community more effective.

The Wall around your life

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

Think of this bubble as “the wall around your life.” Beyond these walls are jobs you cannot hold, places you cannot shop, and a whole range of things you cannot do because it simply takes too long to get there.

The technical term for this is access, but it’s also fair to call it freedom, in the physical sense of that word. The extent of this bubble determines what your options are in life: for employment, school, shopping, or whatever places you want to reach.

If you have a bigger access bubble, you have more choices, so in an important sense, you are more free. That increase in freedom is also closely related to transit ridership.

Access Is a Matter of Geometry

Access is a matter of geometry because it describes what you could reach (not what you do reach). It sets the outer boundary of your options.

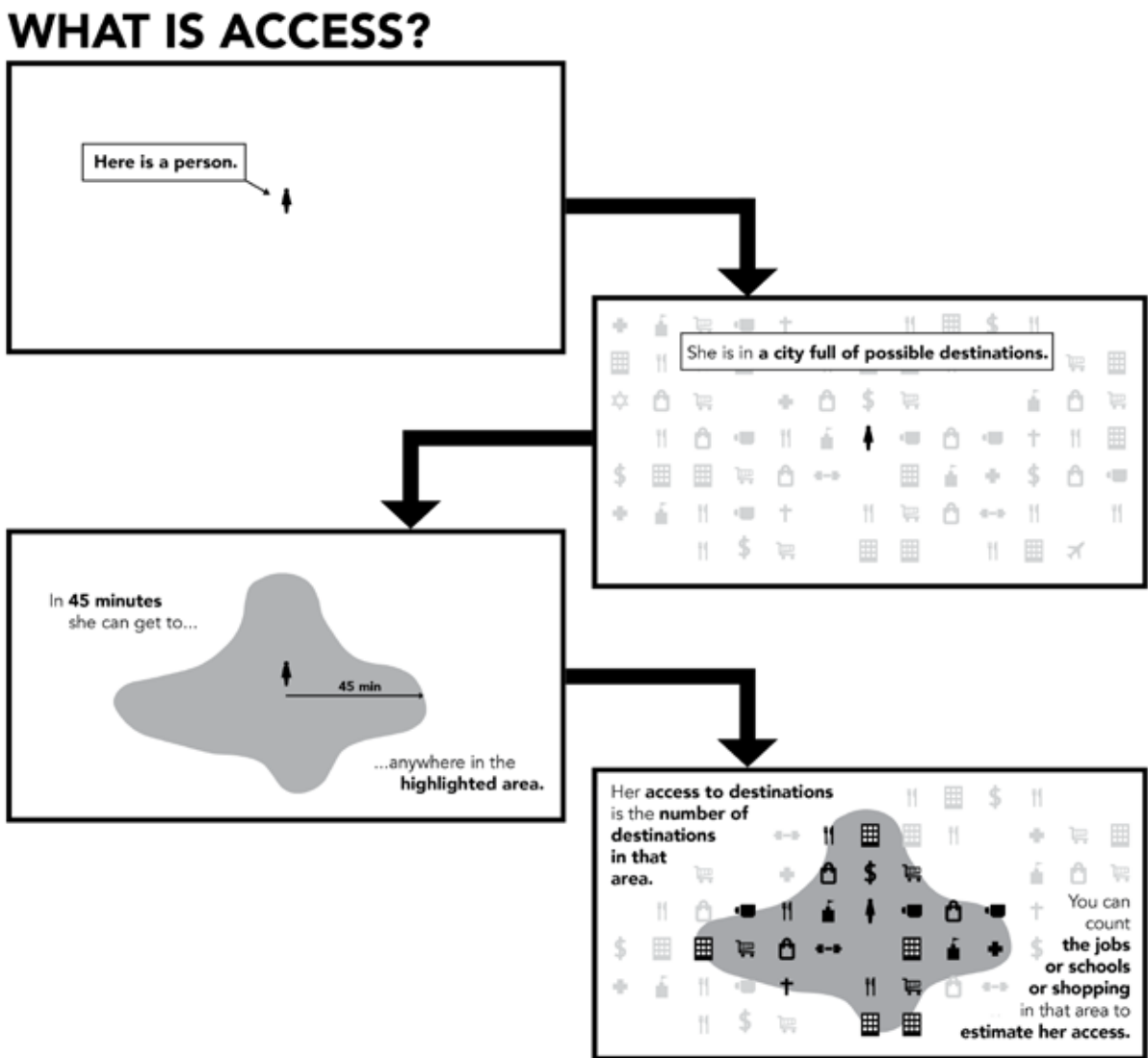
Access is a basic driver of ridership, but it can also be considered a worthy goal in itself. Access from a particular location is something that gives that a location value. Real estate firms routinely study where you can get to by car from a particular development, and we can do a similar analysis using transit. If you are deciding where to live based on whether you can get to your job, school, or relatives, you are asking about access.

How Transit Expands Access

When using transit, the extent of access is determined by:

- The transit network. This includes the frequency, speed, and spans of service. These features determine how long it takes to get from any point to any other point.
- The layout of the community. For each transit stop on the network, this determines how many useful destinations are near the stop or within easy walking distance.

Figure 10: Graphic explaining how improving access increases potential opportunities



How development patterns govern ridership

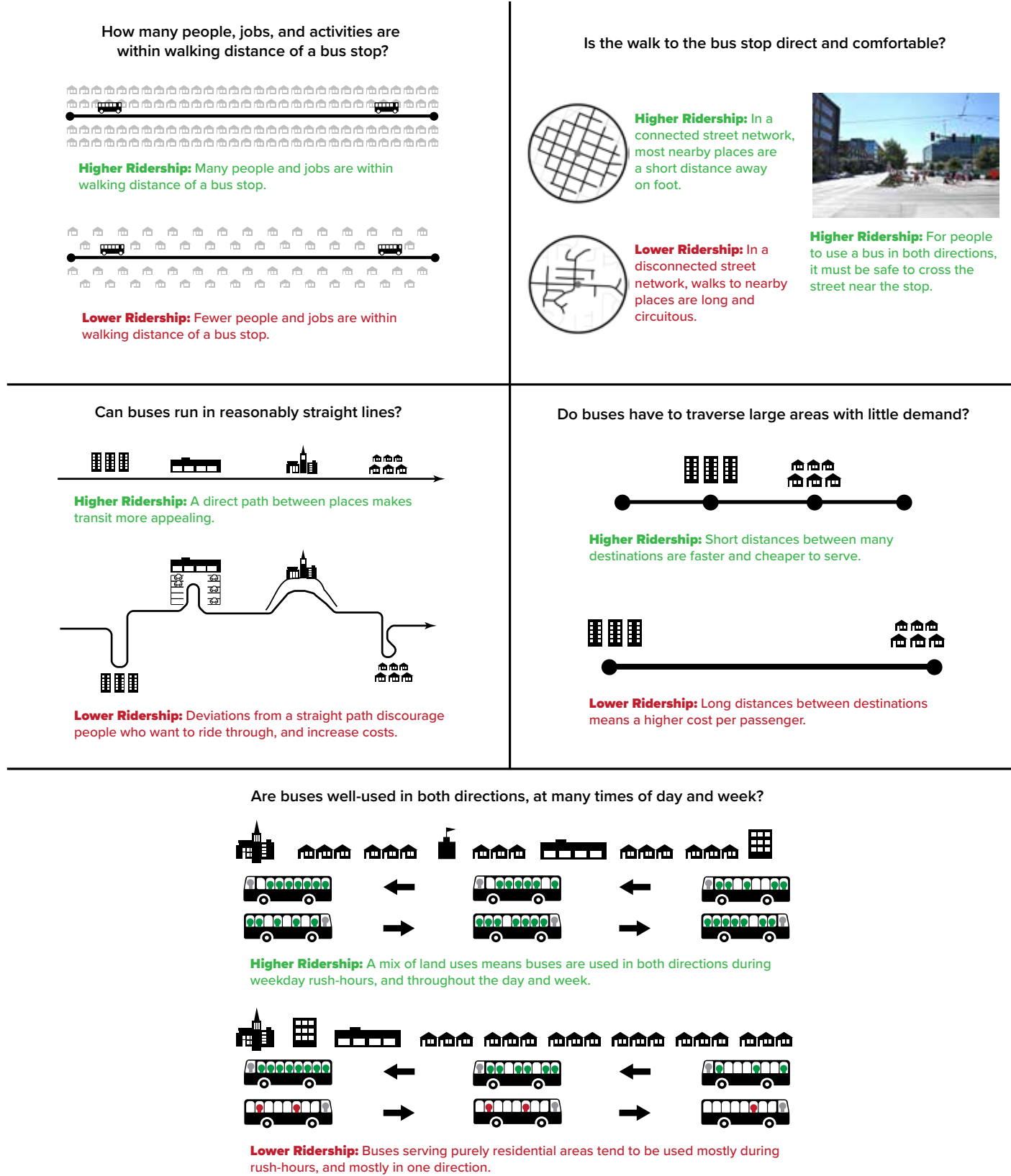
Creating a transit network capable of generating high ridership isn't just about faster or more frequent service. To be useful to many people, fast, frequent service must be available in places where many people will find it useful. A stop that can be used by more people, because there is more to do in the area around it, will always be a higher-ridership stop.

For that reason, these features of the pattern of development are overwhelmingly important, and a high-ridership network will provide more service where they are favorable:

- **Density.** How many people, jobs, and activities are within walking distance of a bus stop? Where there are many people, jobs and destinations, there are more potential travelers.
- **Walkability.** Is the walk to the bus stop direct and comfortable? An area only becomes accessible by transit if most people can safely walk to nearby transit stops.
- **Linearity.** Can buses run in reasonably straight lines? Direct paths between busy places are faster and cheaper for B-Line to operate. Deviations increase cost and add travel time for riders.
- **Proximity.** Do buses have to traverse large areas with little demand? The longer the distance between two places, the more expensive it is to connect them.
- **Mix of Uses.** Are buses well-used in both directions, at many times of the day and week? Where there is a mix of land uses along a direct path, transit can provide access to a variety of destinations. Mixed-use transit corridors tend to be more productive because people ride in both directions all day.

Regardless of the intricacies of local geography, the combination of these five elements determine where transit can be useful for many people, at a relatively low cost.

Figure 11: Key components that support higher transit ridership



What are the Goals of Transit?

Is High Ridership the Only Goal?

If B-Line wanted to maximize transit ridership, it would focus its network around the busiest places where the greatest numbers of people live and work. If B-Line did this, it would be acting more like a business: delivering the best service in places with the most potential customers.

McDonald's is not obliged to provide a restaurant within 1/2 mile of everyone in Butte County. If it were, then the company would have to add many additional locations. Some locations would serve just a handful of homes, and most would operate at a loss because there are so few customers nearby.

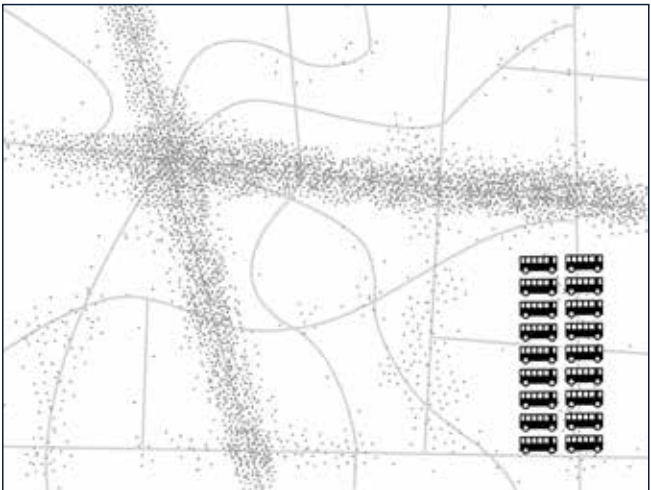
People understand that less-inhabited areas will naturally have fewer McDonald's restaurants than more-inhabited areas. We don't describe this as McDonald's being unfair to places where few people live. They are just acting like a private business. McDonald's has no obligation to serve areas of low demand.

Transit agencies are not private businesses. Most transit agencies decide that they do have some obligation to cover places with fewer people in them even when this would not be a good decision for a business.

The officials who ultimately make public transit decisions hear their constituents say things like "We pay taxes too" and "If you cut this bus line, I will be stranded" and they decide that coverage, even in low-ridership places, is an important transit outcome.

Transit agencies are sometimes accused of failing to maximize ridership, as if that were their only goal. In fact, coverage routes are not designed to achieve high ridership, so they are not failing if they don't! They are intentionally running coverage routes that were never meant to generate high ridership.

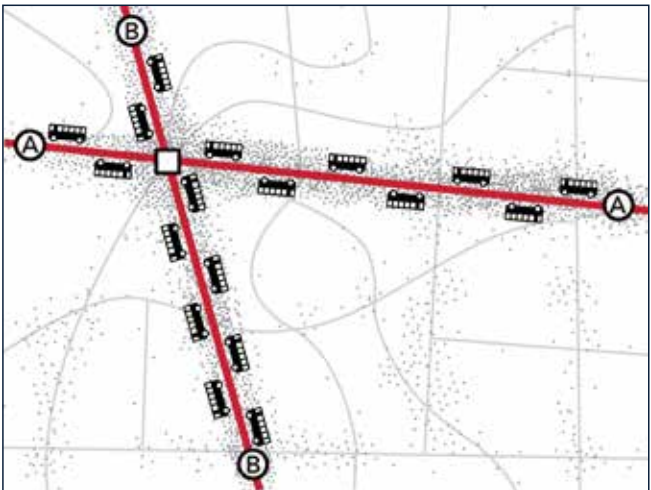
Figure 12: The Ridership / Coverage Trade-off: Abstract Example for Local Service



Imagine you are the transit planner for this fictional town. The dots represent people and jobs and are most concentrated around two roads, as in many towns.

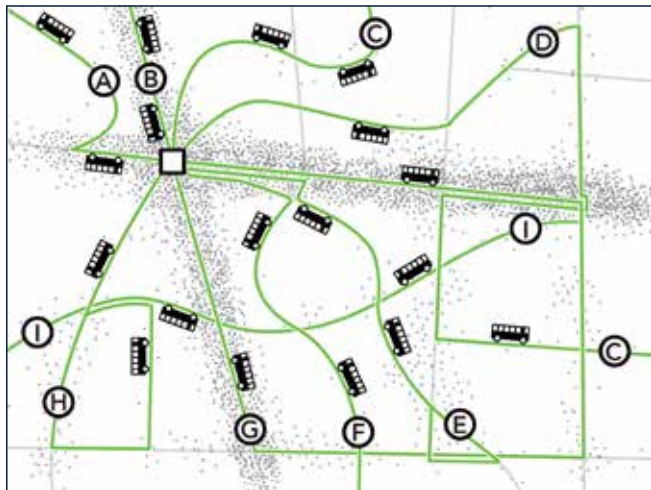
You have 18 buses to design a transit network.

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



High Ridership Goal

All 18 buses are focused on the busiest streets, so buses come frequently (maybe every 15 minutes). Waits 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.



High Coverage Goal

The 18 buses are spread around so that there is a route on every street. Everyone lives near a stop, but buses come infrequent (maybe every 60 minutes). Only a few people can bear to wait so long, so ridership is low.

What are the Goals of Transit?

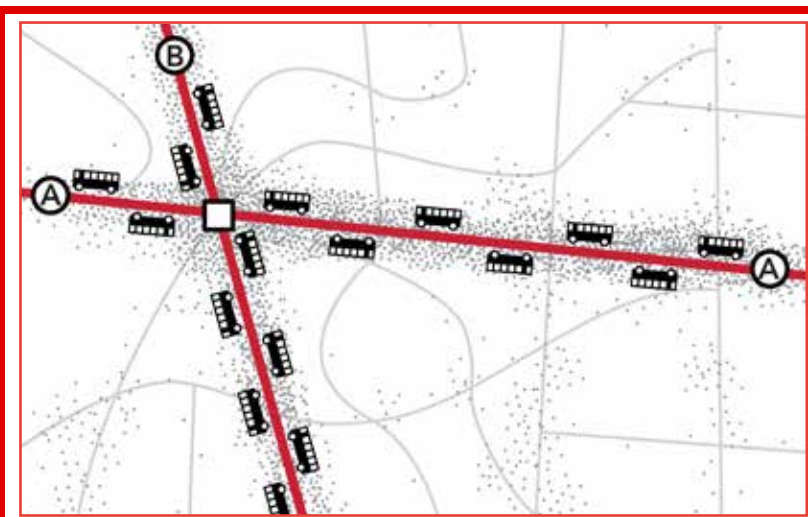
This project is a unique opportunity for the cities and BCAG board to consider and clearly define the right balance between desirable but competing goals for transit.

The most difficult choice for the public, stakeholders, and officials will be between providing **high ridership** and providing **wide coverage**.

Both goals are popular because they are tied to many goals that people care about, as we list in the boxes to the right.

This choice is not binary, but it is a spectrum. The more an agency pursues one of these goals the less it can pursue the other. That's because the two goals imply opposite kinds of network design.

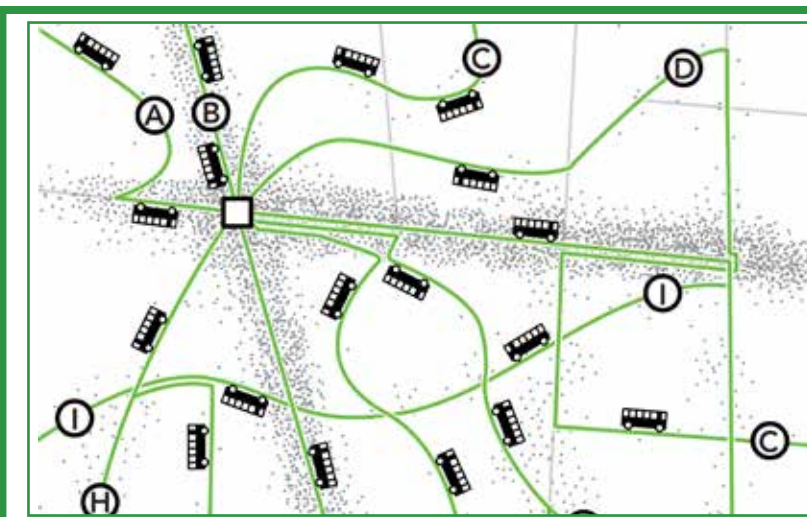
The ridership-coverage trade-off does not have a technical answer. Both sets of goals are important to many people, so this is a political question that must be made by elected officials on the B-Line Board. A key goal of this study is to help the public comment on this question, so that the Board can make the best possible decision.



Reasons a transit agency may want to pursue a ridership goal include:

- More fare revenue, lower subsidy per rider from taxpayers.
- Support for dense and walkable developments
- Reducing vehicle trips, which means:
 - Less congestion
 - Less need for car infrastructure
 - Reduced emissions

Key Performance Measure: Productivity
Ridership relative to cost



Reasons a transit agency may want to pursue a coverage goal include:

- “Access for all.”
- Service for people with severe needs for transit, no matter where they live.
- “We pay taxes too.” Service to every neighborhood that contributes tax revenue.

Key Performance Measure: Coverage
Percentage of people near service

HIGHER RIDERSHIP

HIGHER COVERAGE

Figure 13: Where B-Line’s current network falls on the ridership-coverage spectrum.

↑
Current B-Line Network

Shorter Walks or Shorter Waits?

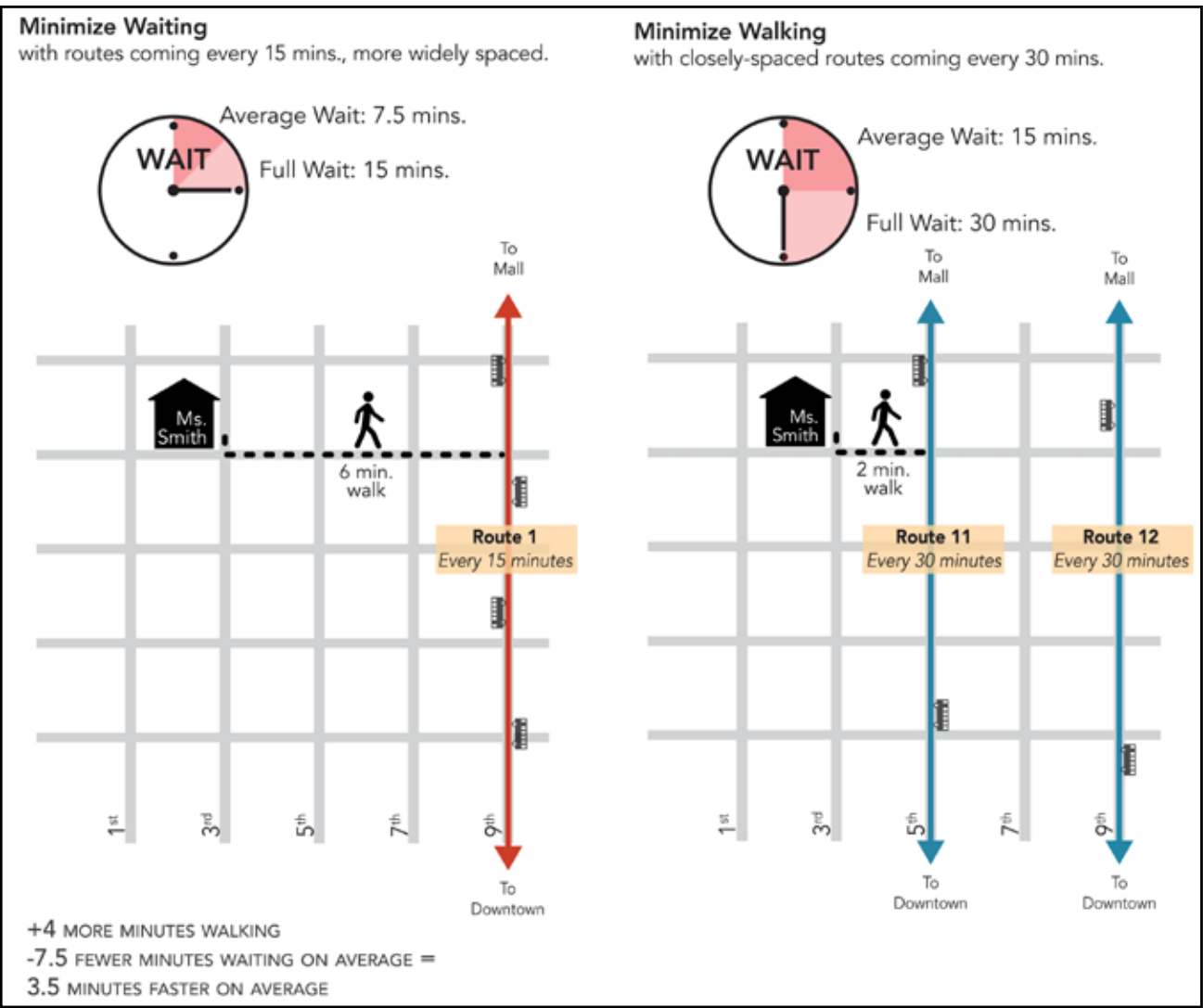
Another way to think about the question of ridership and coverage is to think specifically about how far a person should have to walk or bike to reach a bus stop, and how long they should have to wait, on average, before the next bus comes.

If B-Line planned transit service around longer walks to service, more bus routes could operate more frequently on some corridors. Many riders would wait less and would get to their destination sooner, even with a slightly longer walk. Because it is more useful in getting people to their destinations sooner, frequent service tends to generate higher ridership, even when it requires longer walks.

Walking and waiting are important to consider on their own, because both of these activities add time and inconvenience to any transit trip, and different people have a wide variety of preferences regarding each.

A younger rider in a hurry might walk half a mile to a stop if the bus comes every 15 minutes. But longer walks are harder for seniors, people with disabilities, and anyone carrying groceries or traveling with young children. There is no universal answer, which is why this choice matters.

Figure 14: Comparing a network designed to minimize wait time against one designed to minimize walking distance, using the same amount of service.



Is it more important for service to be frequent with short waits, or for service to be available nearby within a shorter walk?



3

Transit Demand & Transit Needs

Demand & Needs Assessment

This chapter maps the transit demand and needs in Chico and Oroville. The data here answers three questions:

- 1. What are the characteristics of the local and regional demands?
- 2. Where are the strongest demands for transit, with potential for high ridership and low operating costs?
- 3. Where are there moderate or severe needs for transit, where coverage services may be important even if they do not attract high ridership?

On the following pages, these maps and diagrams help us visualize potential transit demands and needs.

WHAT’S THE DIFFERENCE BETWEEN “DEMAND” AND “NEED”?

“Demand” emphasizes the number of people who would find a service useful. Following demand is a high-ridership strategy.

“Need” gives weight to people who are more dependent on public transit because of their circumstances. Some severe needs generate high ridership but many do not. It depends on where the people are located and whether that’s a place that transit can serve efficiently.

Demand Assessment

The transit demand is mostly defined by **WHERE** people are, and **HOW MANY** of them are there, rather than by **WHO** they are.

On the following pages, these maps help us visualize the transit demand:

- Residential density
- Job density
- Activity density (the sum of residents and jobs)
- Regional and local travel patterns
- Total trip destinations
- Travel patterns by trip purpose

All else being equal, density matters more than income and age if you are trying to predict where transit will get high ridership.

Who people are still matters, especially when designing services to meet a coverage goal, but it is a secondary consideration for ridership.

Needs Assessment

We learn about transit needs by examining **WHO** people are and what life situation they are in.

On the following pages, these maps help us visualize transit needs:

- Density of low-income residents
- Density of zero-vehicle households
- Density of seniors
- Density of youth

No single measure can tell us that a person has a severe need for transit. Some people in a zero-vehicle household can afford to hire drivers. Some rarely drive but are comfortably retired. We must consider these measures together to understand where needs for transit in Chico and Oroville are likely to be serious.

How to Use These Measures

No single map or number can tell us that a place has high ridership potential or high need. We must consider them as a whole.

To increase ridership or to provide service to those in need, we look at these maps alongside input from staff, local government representatives, and people with direct knowledge of their communities. Public outreach is an essential part of that process.

We encourage you to read through this chapter and share your perspective. You know your community. That knowledge shapes how we interpret what the data shows.

Demand: Residential Density

Residential density is an essential consideration when thinking about the transit demand and where to locate service. This measure tells us how many people live near each transit stop and who could therefore find that stop useful. When more people are close together, the potential demand that transit can address is larger.

In Chico, residential density is highest just east of California State University, Chico (CSUC) **A** driven largely by university housing. A second concentration sits south of Downtown **B**, where multi-family housing and older, denser housing stock bring more residents into a smaller area. Additional pockets of higher density appear along major arterials, including near Lassen Avenue **C**.

In Oroville, residential density is highest along Table Mountain Boulevard **D**, where newer multi-family housing has been built in recent years. The older neighborhoods around Orange Avenue **E** also support a meaningful concentration of housing near central Oroville.

Figure 15: Residents per square mile in Chico

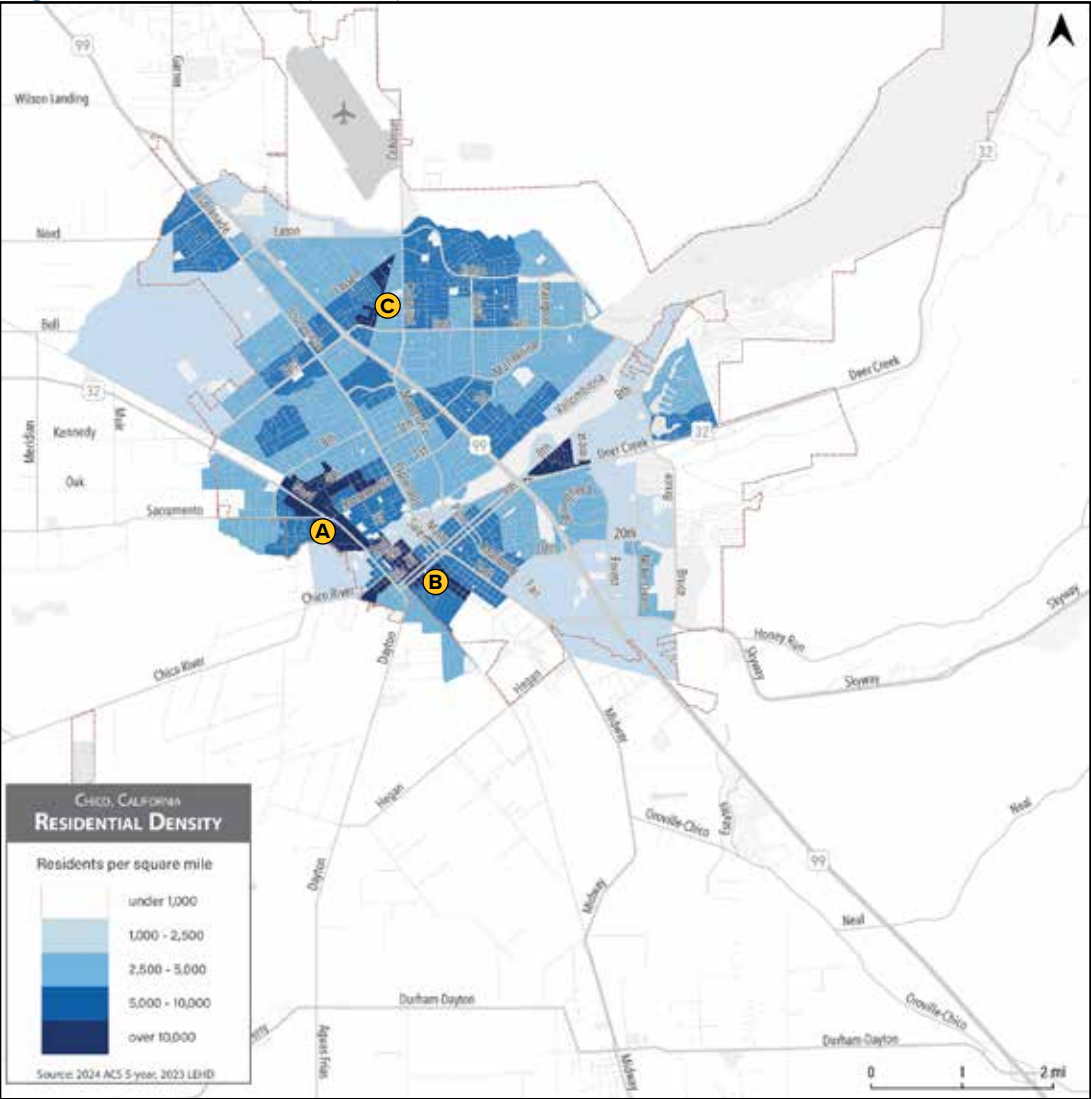
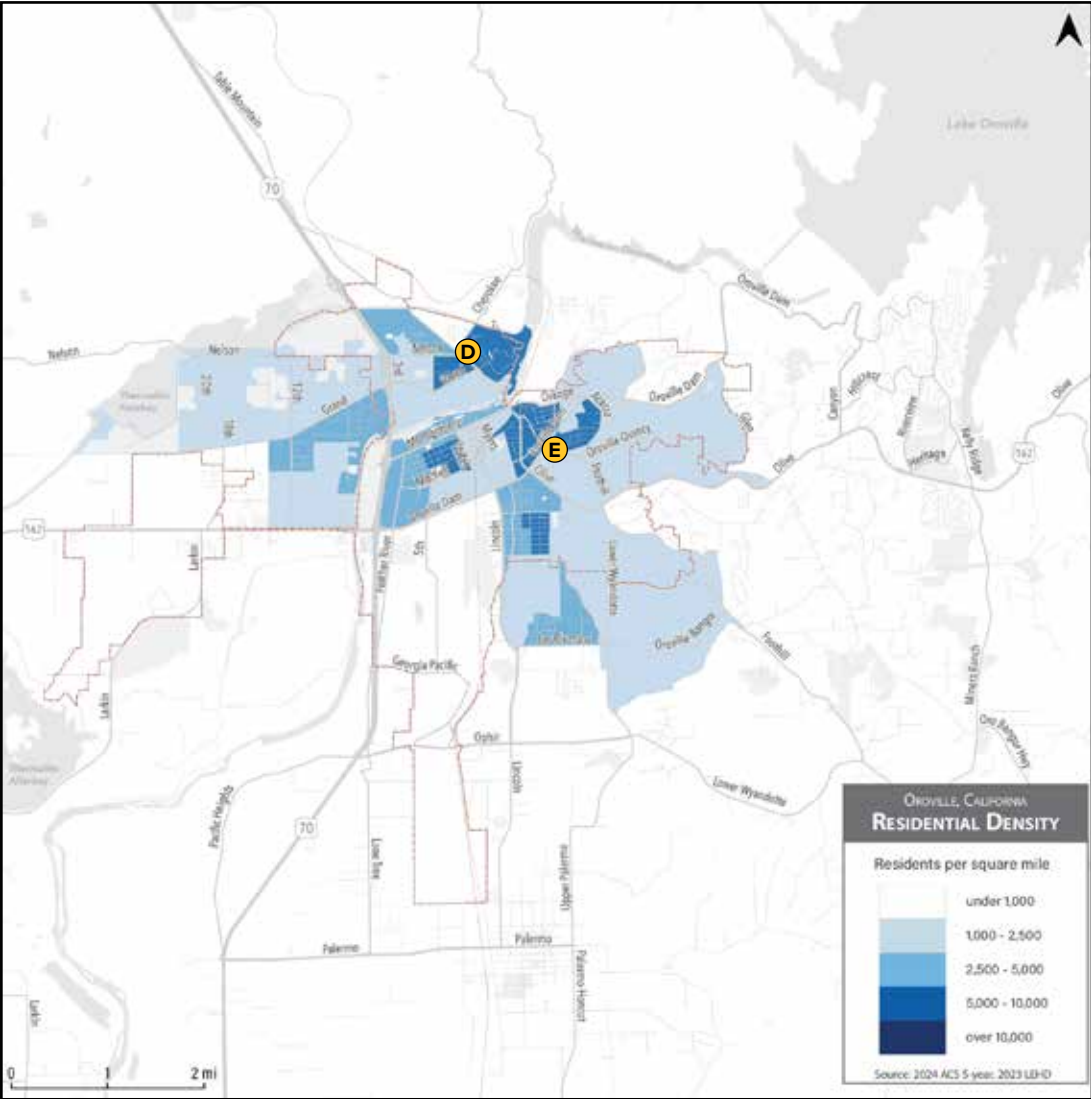


Figure 16: Residents per square mile in Oroville



Demand: Job Density

A map of job density shows not only where people travel for work, but where they travel for services, shopping, and other needs. One workplace can be, over the course of a day, a destination for dozens or even hundreds of people. For this reason, job density typically predicts transit ridership better than residential density.

In Chico, job density is highest in three areas. The historic downtown core **A** holds a high concentration of jobs. The activity corridor along E 20th Street, Forest Avenue, and Park Avenue/Skyway **C** in southeast Chico holds another, anchored by the Chico Mall and big-box retailers. A third concentration sits along Lassen Avenue **B** in north Chico, where the Social Security Administration and a cluster of health care providers create dense employment.

Oroville has lower overall job density than Chico, but two areas stand out. The County Center in north Oroville **D** concentrates jobs around the Butte County Administration, Courts, and various law enforcement such as the jail, juvenile hall, and probation. Historic downtown Oroville **E** has a second concentration, reflecting its traditional mix of small businesses and services.

Figure 17: Jobs per square mile in Chico

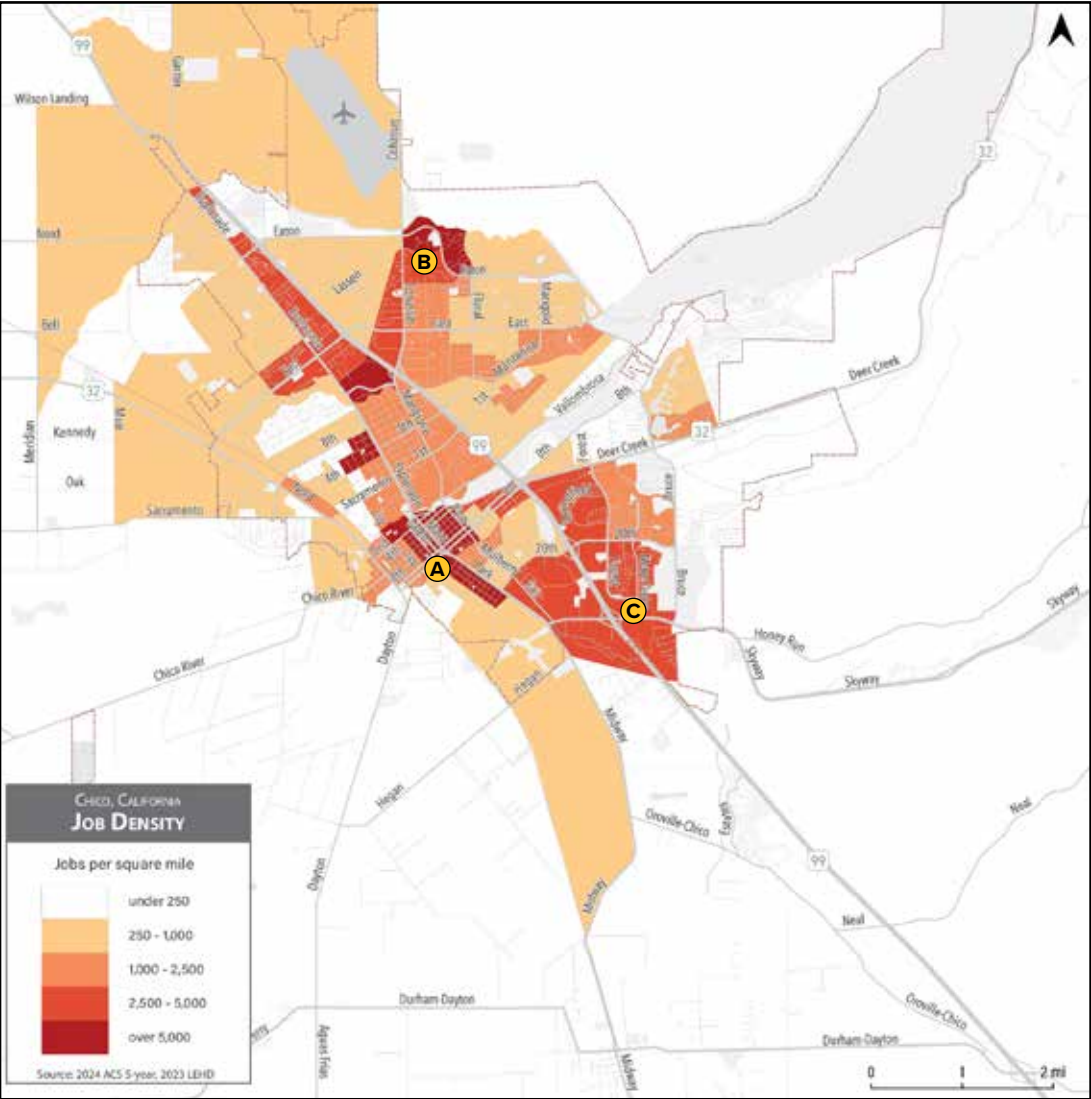
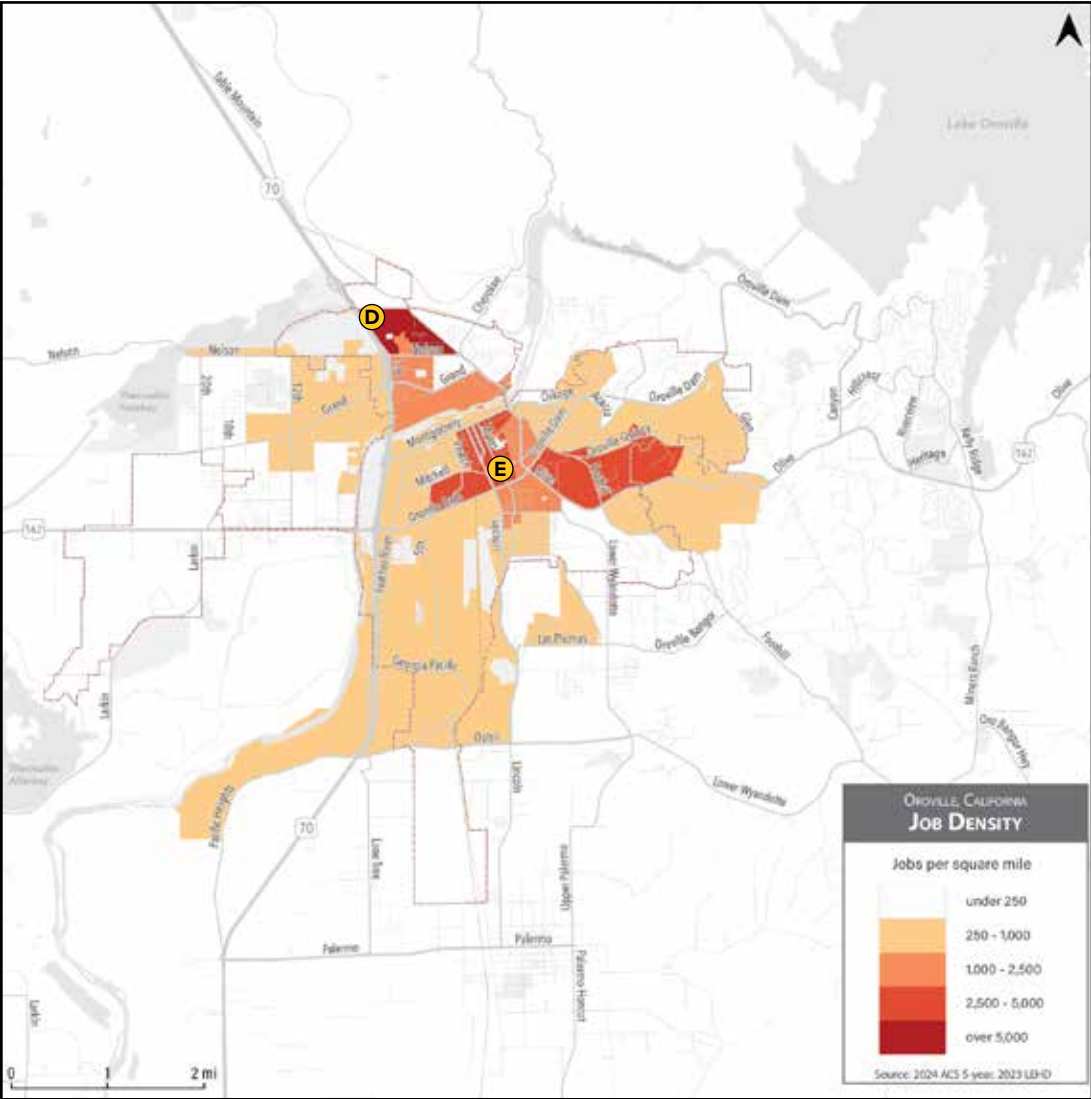


Figure 18: Jobs per square mile in Oroville



Demand: Activity Density

Resident and job density can be combined in a single map that shows activity density. Activity density helps visualize the overall strength of the transit demand in an area or along a corridor.

In addition to density, the mix of uses along a corridor affects how many people transit can attract, relative to cost. This is because an area with a mix of housing, retail, services and jobs tends to generate more demand for transit in both directions, throughout the day.

Where residential, commercial and other uses are mixed, people are traveling in both directions so buses can be full in both directions. Transit routes serving purely residential neighborhoods, or purely employment areas, tend to get less ridership, and cost more to provide, than routes serving a mix of land uses.

The highest levels of activity density can be found around Chico’s downtown core and CSUC **A**, where the historic concentration of jobs and university housing are both prevalent. Another concentration can be found around the intersection of East Avenue and Esplanade **B**, where arterial facing business and multi-family housing developments provide higher activity densities. The map also shows that activity in southeast Chico around Skyway **C** is primarily jobs. New multifamily housing in the area may change that balance over time.

In Oroville the map reflects a more traditional divided land-use pattern. Jobs concentrate around the County Center **D**, while housing concentrates around Table Mountain Boulevard, but these areas sit in separate parts of the city, with little mixing between them. The map also helps show that while Thermalito **E** does have a mix of housing and jobs, the overall density of each are lower than central Oroville and closer to those found in South Oroville.

Figure 19: Residents and Jobs per square mile in Chico

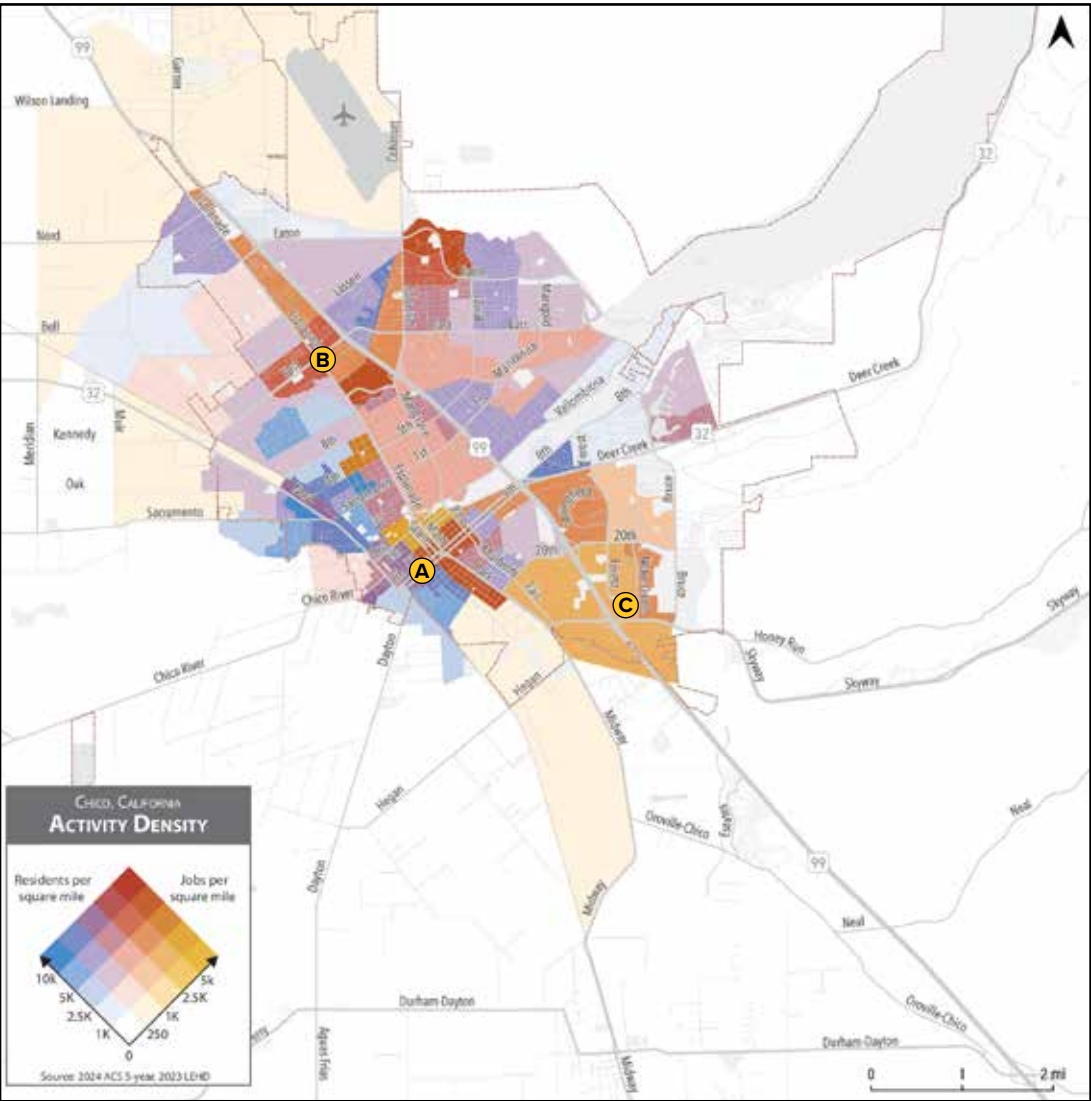
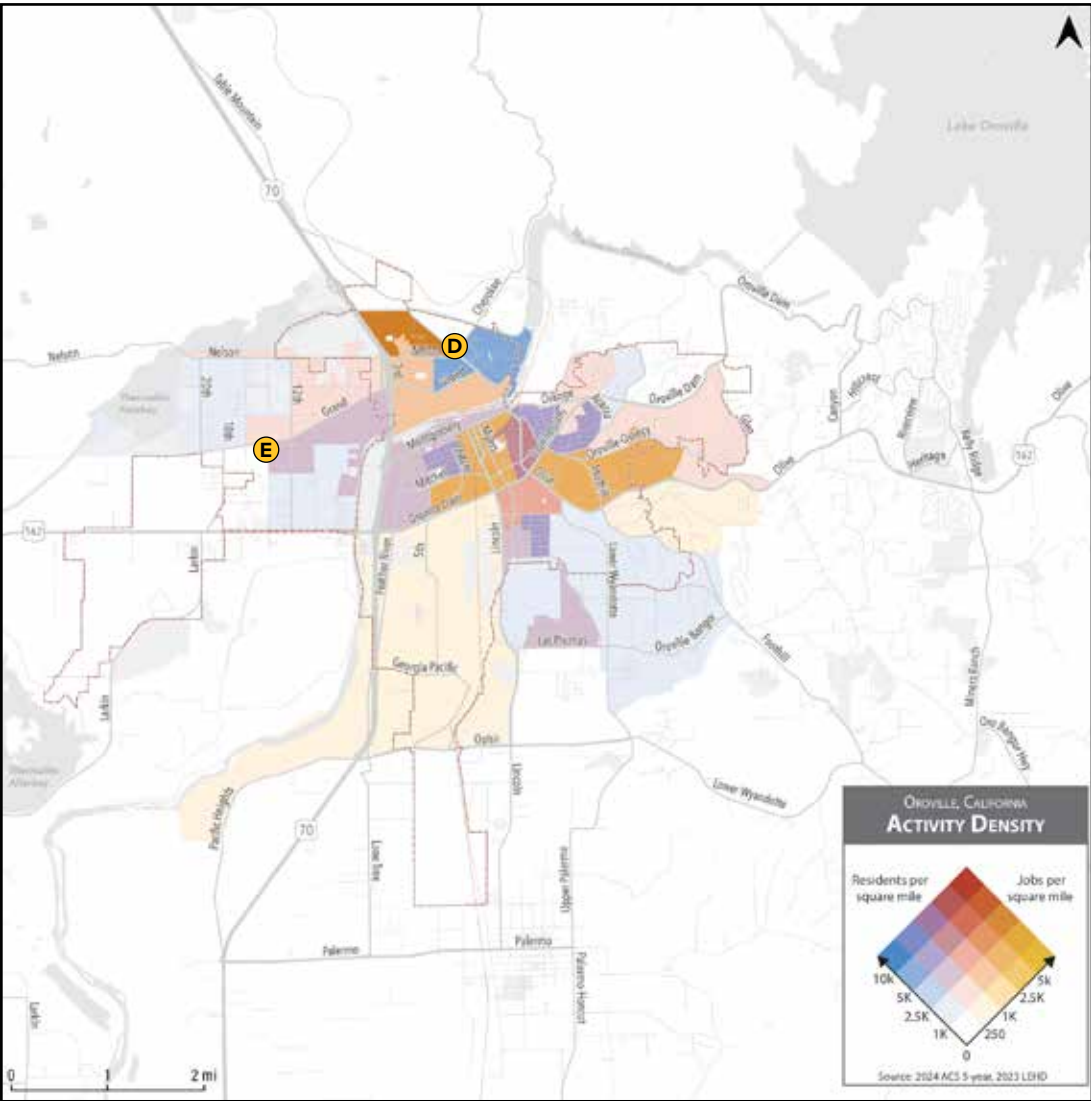


Figure 20: Residents and Jobs per square mile in Oroville



Demand: Walkability

To use transit, people need to be able to walk to the bus stop. The street design around a bus stop determines if people can reach the stop by walking.

The graphic on the bottom of this page shows two bus stops with a 1/4 mile circle around each one. The black lines show the parts of the street network that are within 1/4 mile walk of the stop. Not all of the 1/4 mile circle is in a 1/4 mile walk.

The street network in the top example is a simple grid that allows many people to easily walk to the bus stop. The bottom example shows a disconnected street network where fewer places are within a 1/4 mile walk of the bus stop. Even though many people may live near this bus stop, some people have to walk a long distance to get there. To a transit planner who is trying to maximize ridership, the effect is the same as if the density were lower: fewer people who can benefit from the service.

It is equally crucial for pedestrians to be able to cross the street in order to access the bus stop. If a road is too hazardous to cross, people won't be able to use transit in both directions. When they are dropped off on the other side of the street, they will be stranded. This situation frequently occurs in areas with lower density development, like Thermalito, where sidewalks and pedestrian facilities might be missing, even if there is a connected road network.

Figure 21: Map of road connectivity in Chico

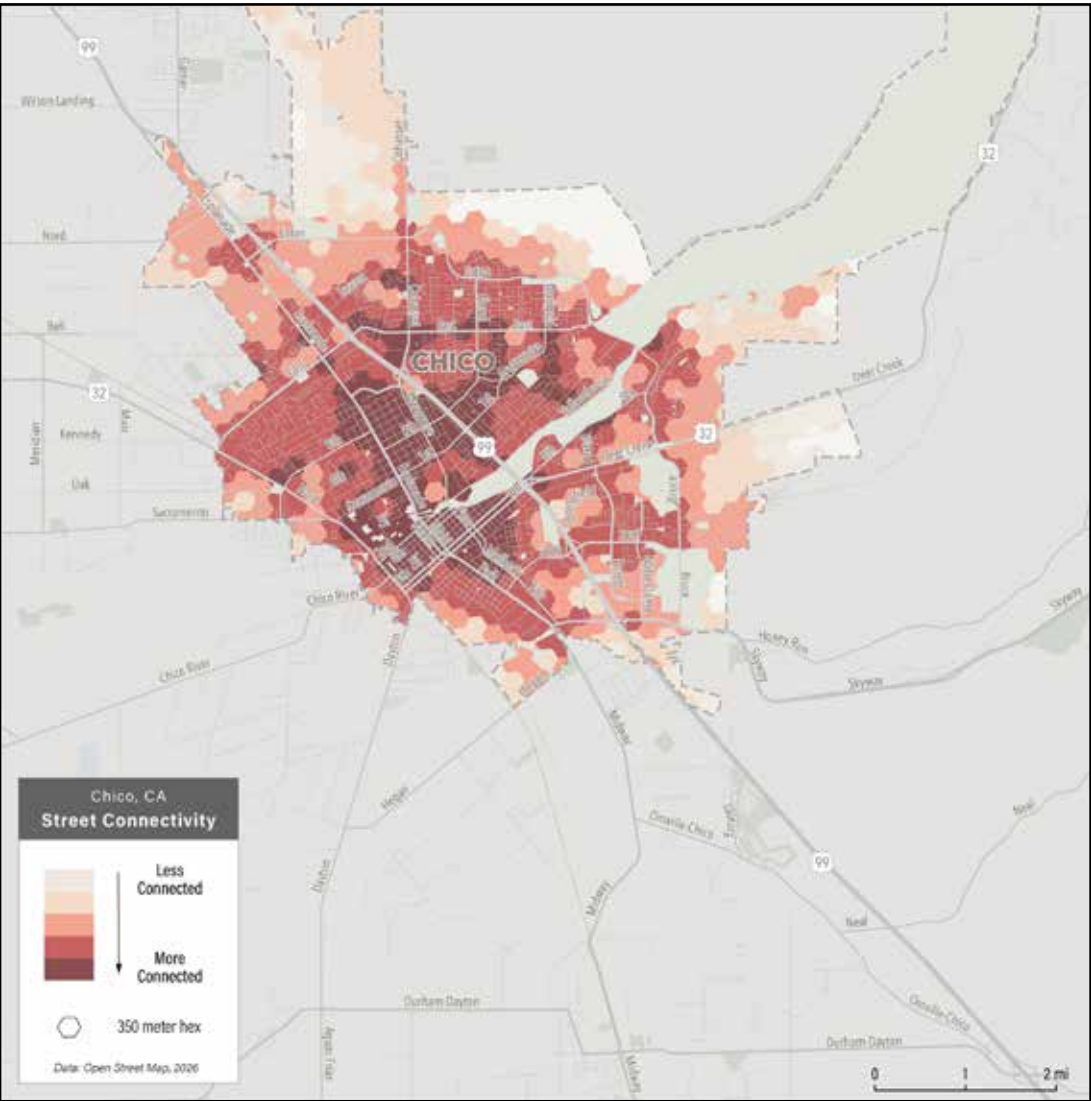


Figure 22: Map of road connectivity in Oroville

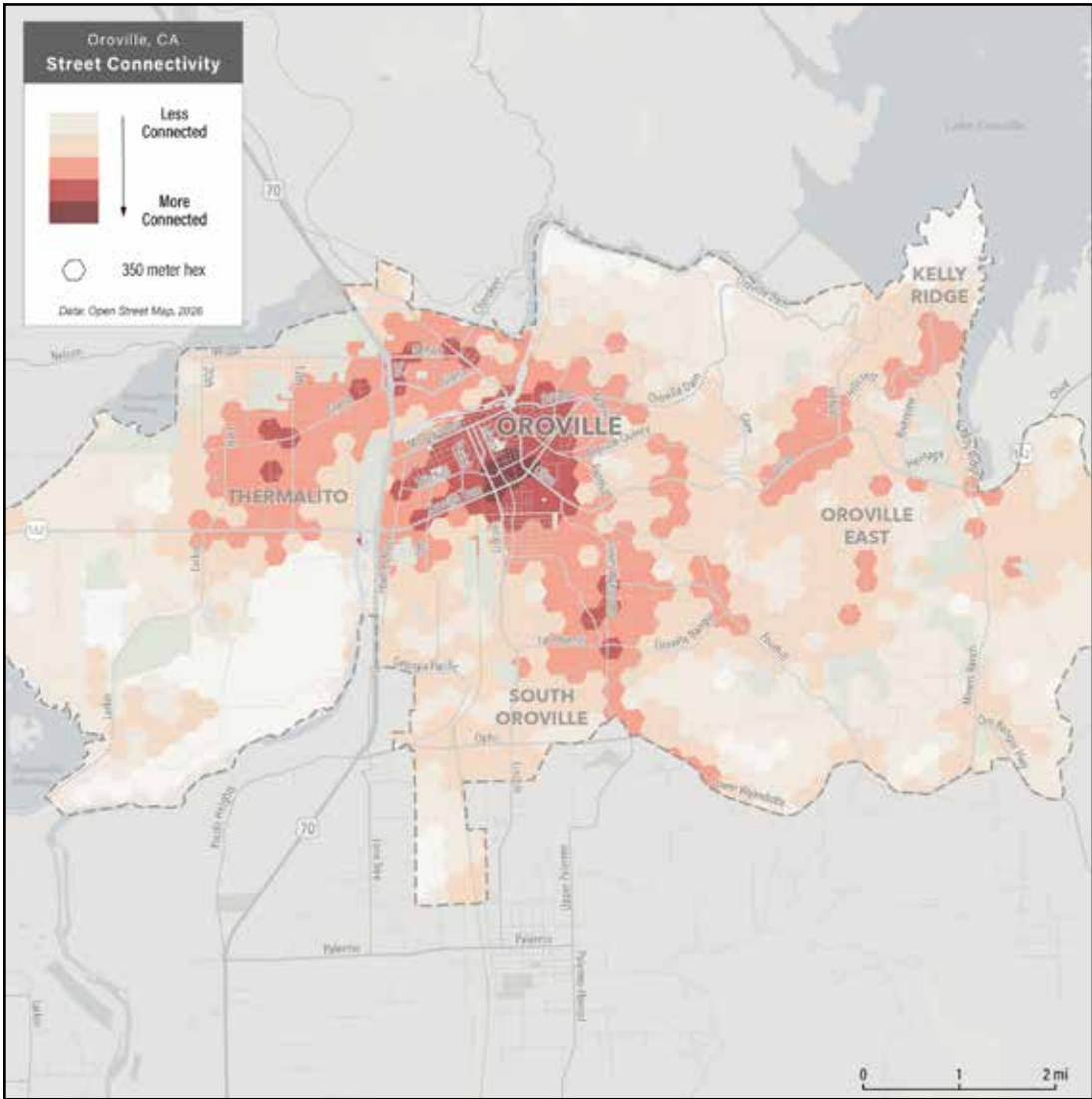
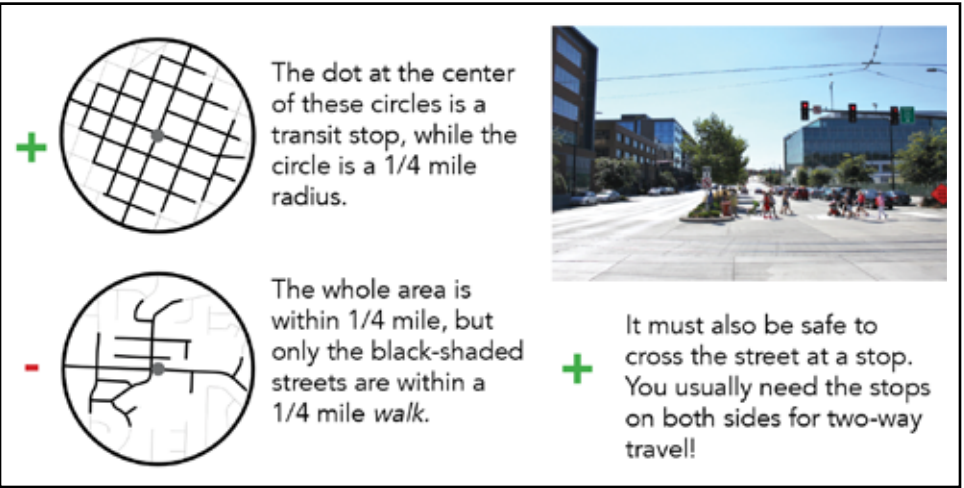


Figure 23: Illustration demonstrating how a gridded street layout (commonly found in developments before the 1950s or in more compact urban areas) enables a pedestrian to access a larger total area compared to a disconnected network (typically observed in suburban environments).



Demand: Travel Patterns (local and regional travel)

This map shows travel patterns across the county, with lines drawn between hexes representing trips made between zones. Larger, brighter lines indicate more trip between zones. Circles within each hex represent the total number of trips that begin and end within that same zone.

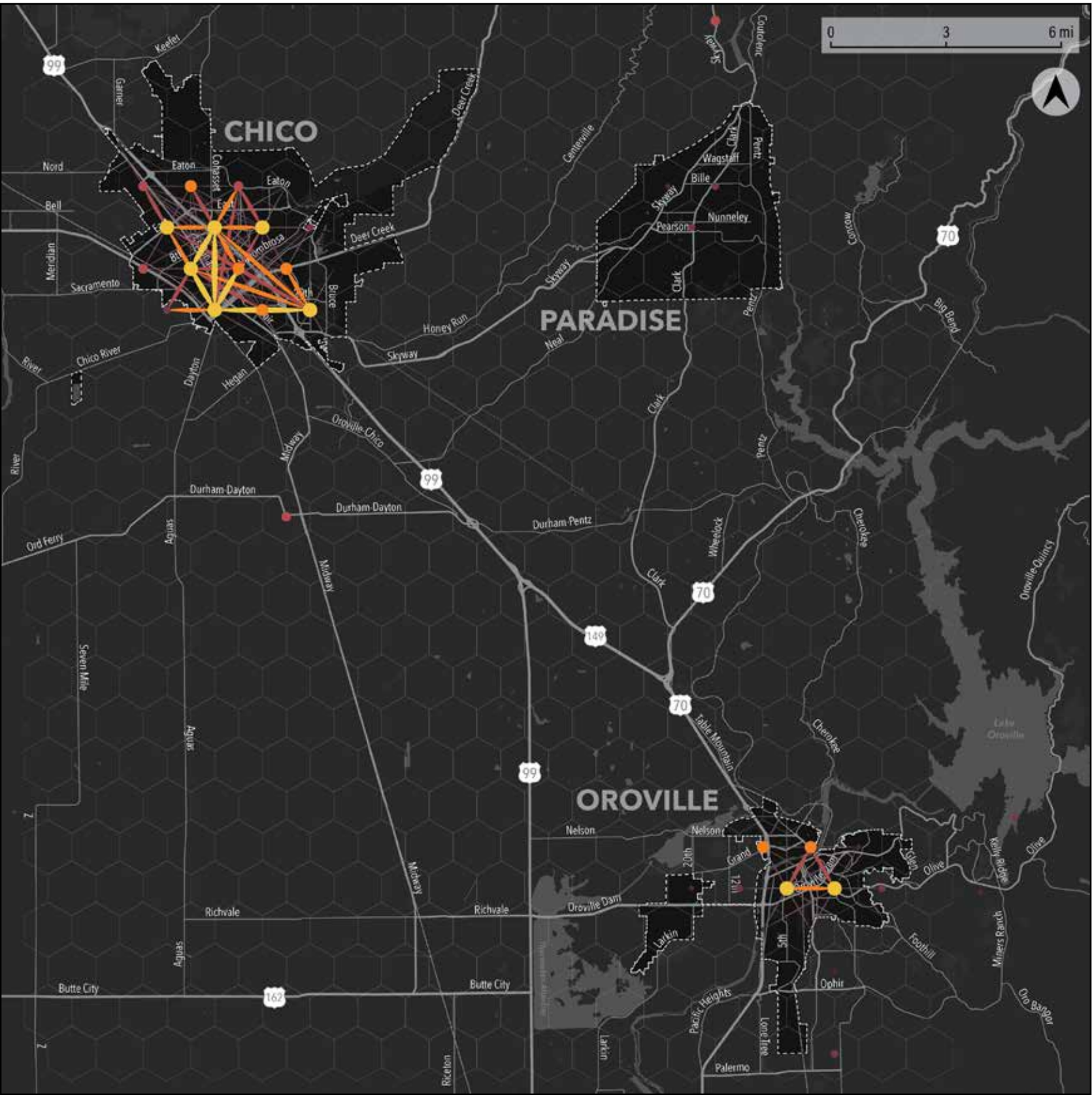
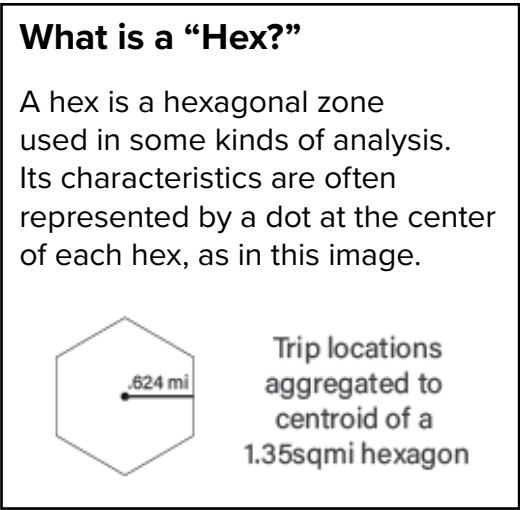
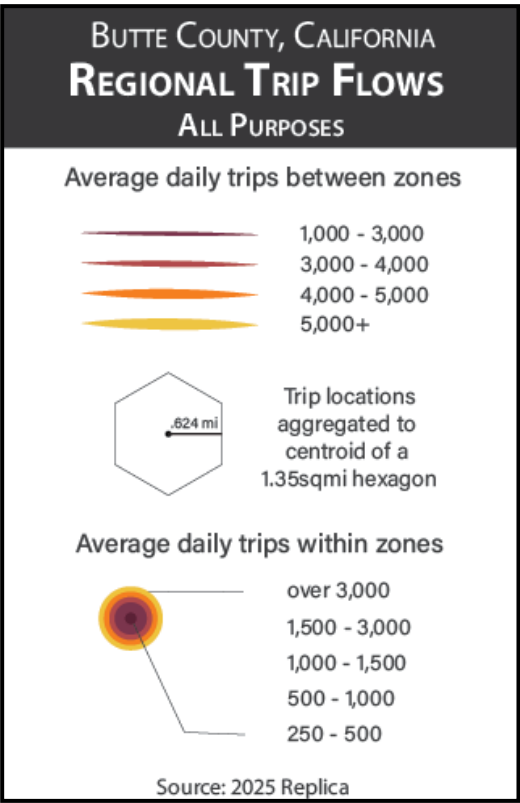
This data is produced from Replica, which estimates how people get around by analyzing anonymized cell phone location data alongside census and survey information.

Overall the patterns shows that most travel stays within each city, concentrated around its densest areas. While some connections exist between cities, most trips are shorter and remain local.

In Chico, the strongest connections can be found between downtown and the University area, North Valley Plaza, and Skyway areas. A similar strength connection is also present between the University area and North Valley Plaza area.

In Oroville, the connections are much more clear to see. A triangle emerges between the traditional downtown west of Lincoln Street, the more recent arterial developments east of Lincoln Street, and the concentration of housing and jobs north around Table Mountain Boulevard and County Center. This suggests a much stronger demand for travel within Oroville than between Oroville and Chico for people’s day-to-day trips.

Figure 24: Average Daily Trips within and between Chico and Oroville



Demand: Travel Patterns (destinations)

This map shows total trips to each location by all modes of travel (car, bus, bike, etc), excluding trips ending at home, with darker hexes representing higher concentrations. Because home trips are excluded, the map highlights where people are actually going throughout the day, for work, errands, and other non-home activities, rather than simply where they live.

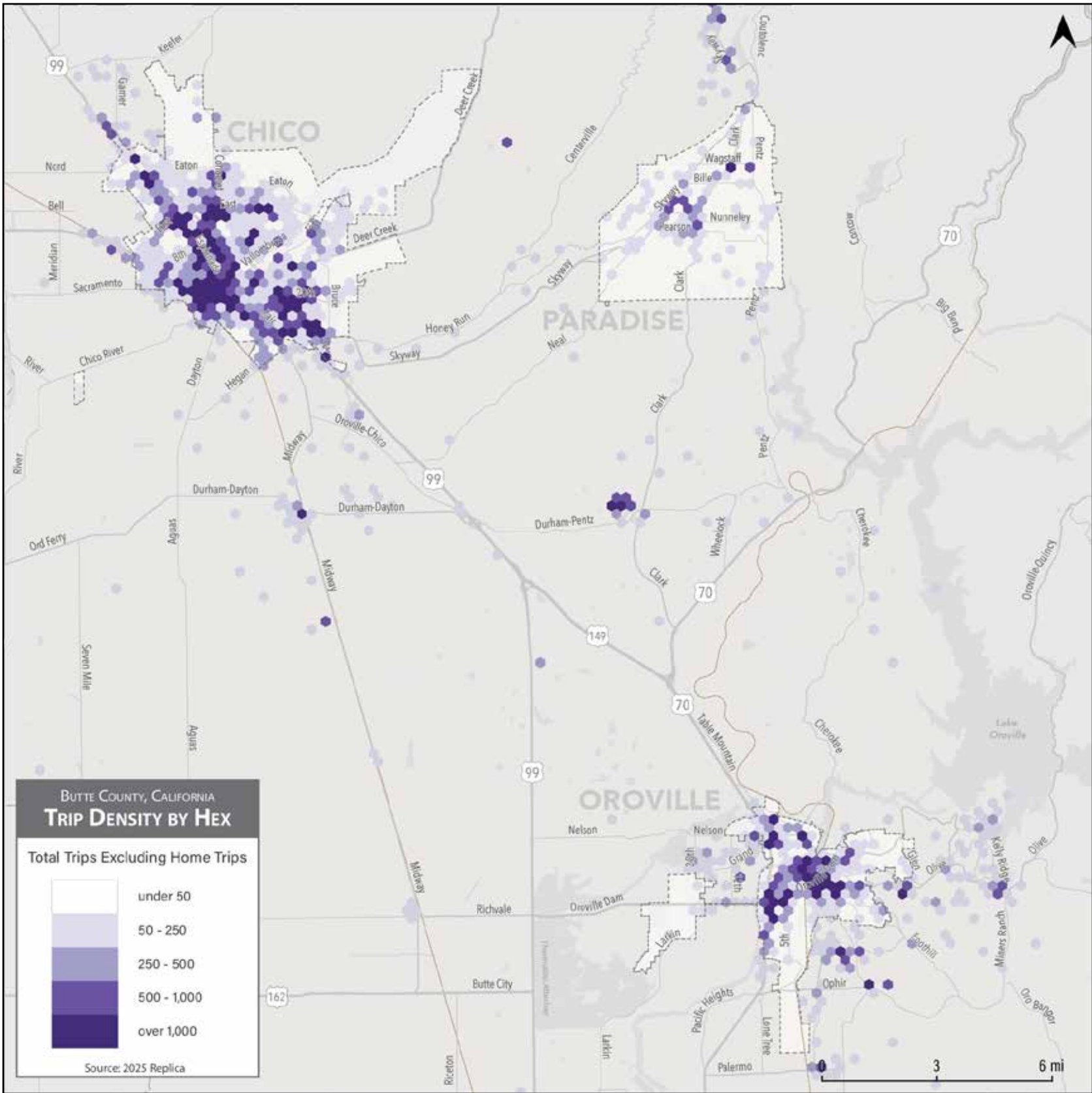
Across the county, non-home trips are strongest in the core of each city, reflecting the concentration of jobs, retail, and services found there.

In Chico, the darkest concentration appears in downtown / University areas, consistent with its role as the city’s primary destination for work and services. The Esplanade and Skyway areas also shows elevated activity, tied to the concentrations of business and jobs located in the areas.

In Oroville, the darkest concentrations appear around Oroville Dam Boulevard reflecting its role as the city’s main hub for business activity. North Oroville and the County Center also show a smaller but notable concentration.

Outside the two cities, a few smaller concentrations of non-home trips are also worth noting. Paradise and Magalia, along Skyway, are currently served by Route 41. Butte College, located between Chico, Paradise, and Oroville, generates its own demand and is currently served by Butte College Buses. A smaller concentration also appears around Durham, just south of Chico along Midway, currently served by Route 32. These areas may warrant consideration, but are outside the scope of local Chico and Oroville Networks being looked at in this study.

Figure 25: Total daily trips (all modes) to non-home destinations.



Demand & Need: Low-Income Residents

Understanding residents’ incomes can help inform the design of transit services. People living on low incomes are less likely to afford to own reliable cars and therefore more likely to use public transit. In neighborhoods with medium to high density of lower-income residents, there is often high ridership potential especially if they have walkable streets.

However, an area with low-income residents doesn’t necessarily generate high transit ridership just because of income. People with low incomes should be viewed as a good demand for public transit, but one whose ridership must still be earned with service that is good enough to be reasonably convenient. Like everyone else, low-income people only have 24 hours in the day and must use that time efficiently.

In Chico, poverty is concentrated in the area around Chico State University **A**, shaped by older housing stock and the high concentration of university students who commonly qualify in this category.

More importantly for coverage services, concentrations of residents living under 150% of the poverty line can be found along north Esplanade **B** and south of downtown around Park and Mulberry Street **C**, where higher densities of multifamily housing, mobile home parks, and smaller traditional single family housing remain affordable.

In Oroville, poverty is most concentrated in the Table Mountain Boulevard area **D**, reflecting the concentration of multifamily housing units present. Older neighborhoods, such as those around Orange Avenue **E**, also shows a similar pattern due to affordable housing.

Figure 26: Residents under 150% of the poverty line in Chico

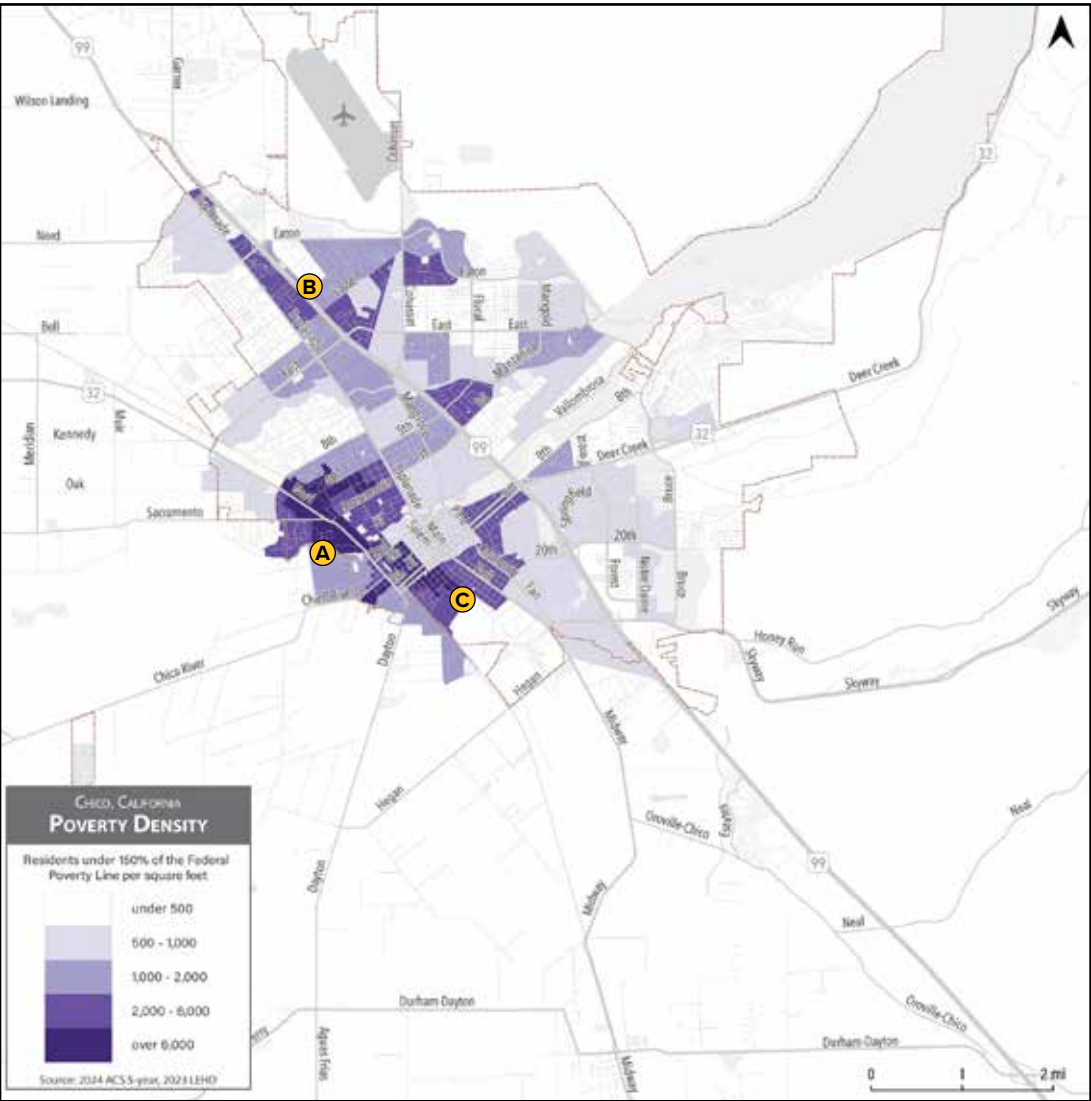
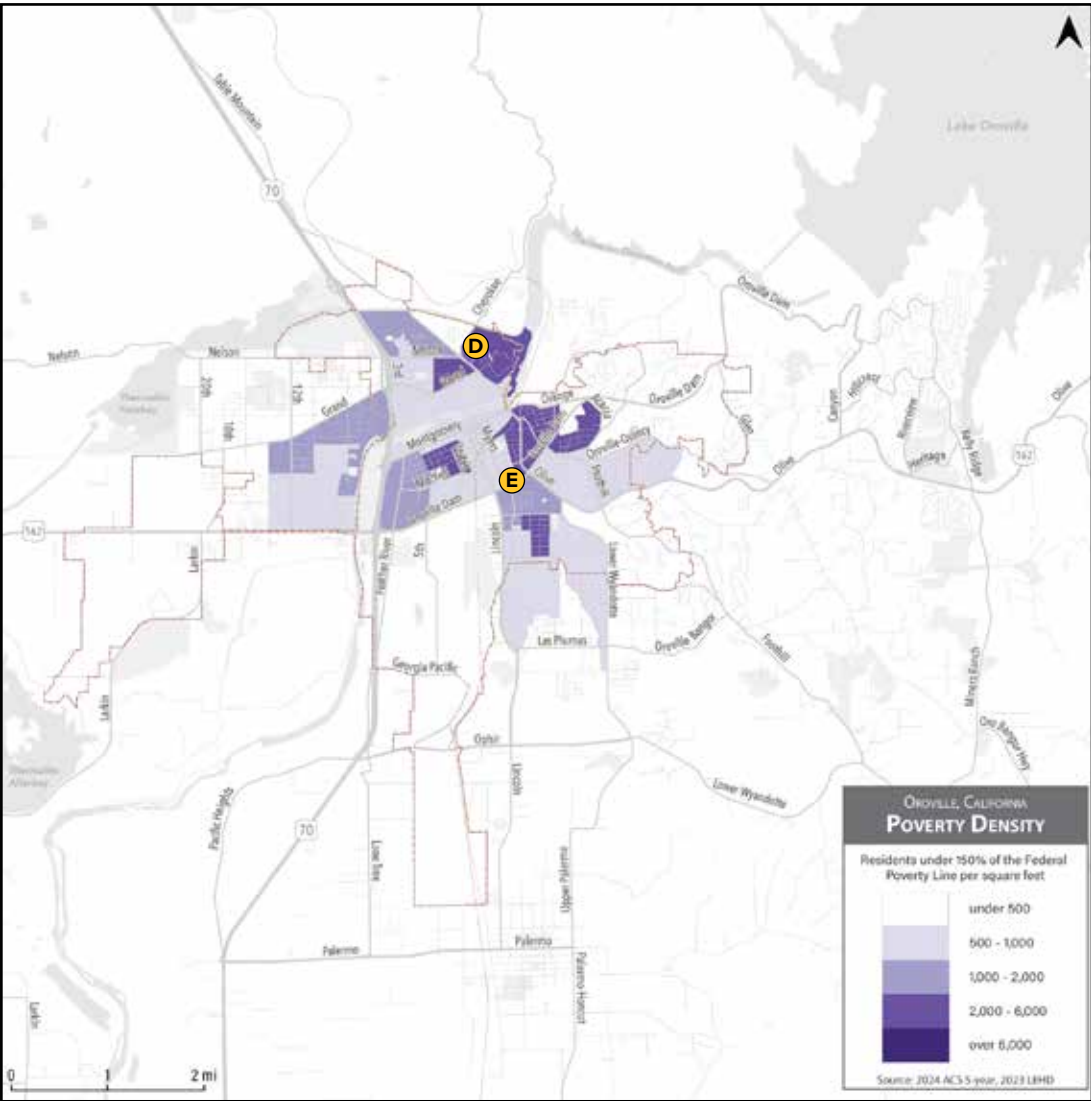


Figure 27: Residents under 150% of the poverty line in Oroville



Demand & Need: Households Without Cars

People who have less or no car access will need to use other modes when they travel. This might include walking, cycling, getting a ride from a friend or family member, or, if makes sense for their trip, transit. Transit can be especially helpful for those without access to a car, or those who cannot drive for a multitude of reasons.

If transit does not present a realistic travel option, then people without cars will find other ways of reaching the places they need to go. People in households without vehicles are not necessarily “transit dependent” but do have a greater inclination toward transit use because they don’t have a car in their driveway, always ready to go.

Zero and low-vehicle households are often correlated with elderly or young residents, high student populations, and low incomes. These are all indicators of people’s individual inclination to use transit.

In Chico, there are pockets of zero-vehicle households in multiple block groups. One around Lassen Avenue **A**, where senior facilities are present, or downtown and around the university **C** where students are more likely to not own a personal vehicle. There is also a larger pocket near the intersection of East and Esplanade **B**, next to Highway 99.

In Oroville, zero-vehicle households are most concentrated in the northern apartment area along Table Mountain Boulevard **D**. Another concentration can be found near Wyandotte Avenue **E** just south of the car oriented businesses along Oroville Dam Boulevard.

Figure 28: Household without a vehicle per square mile in Chico

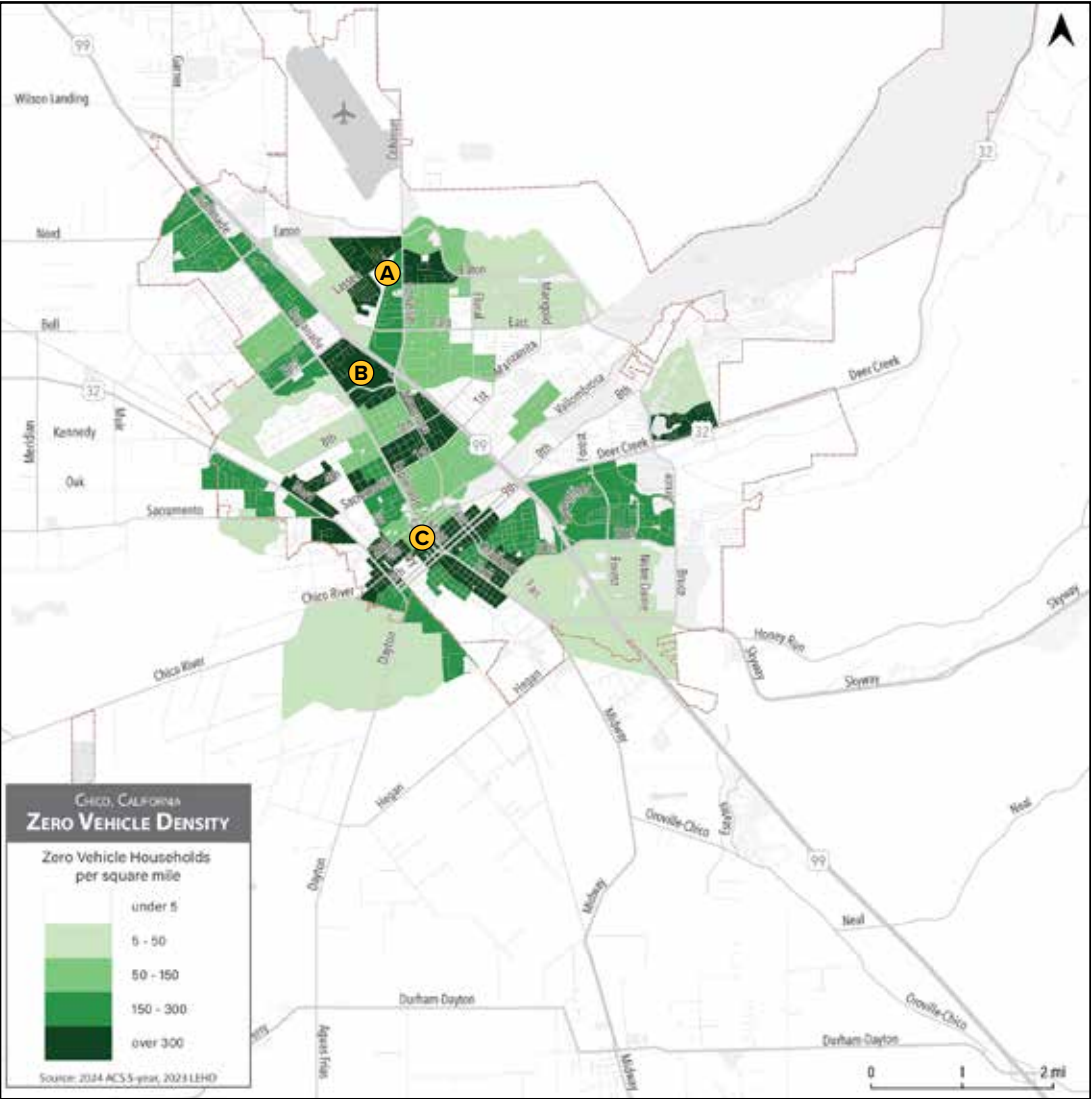
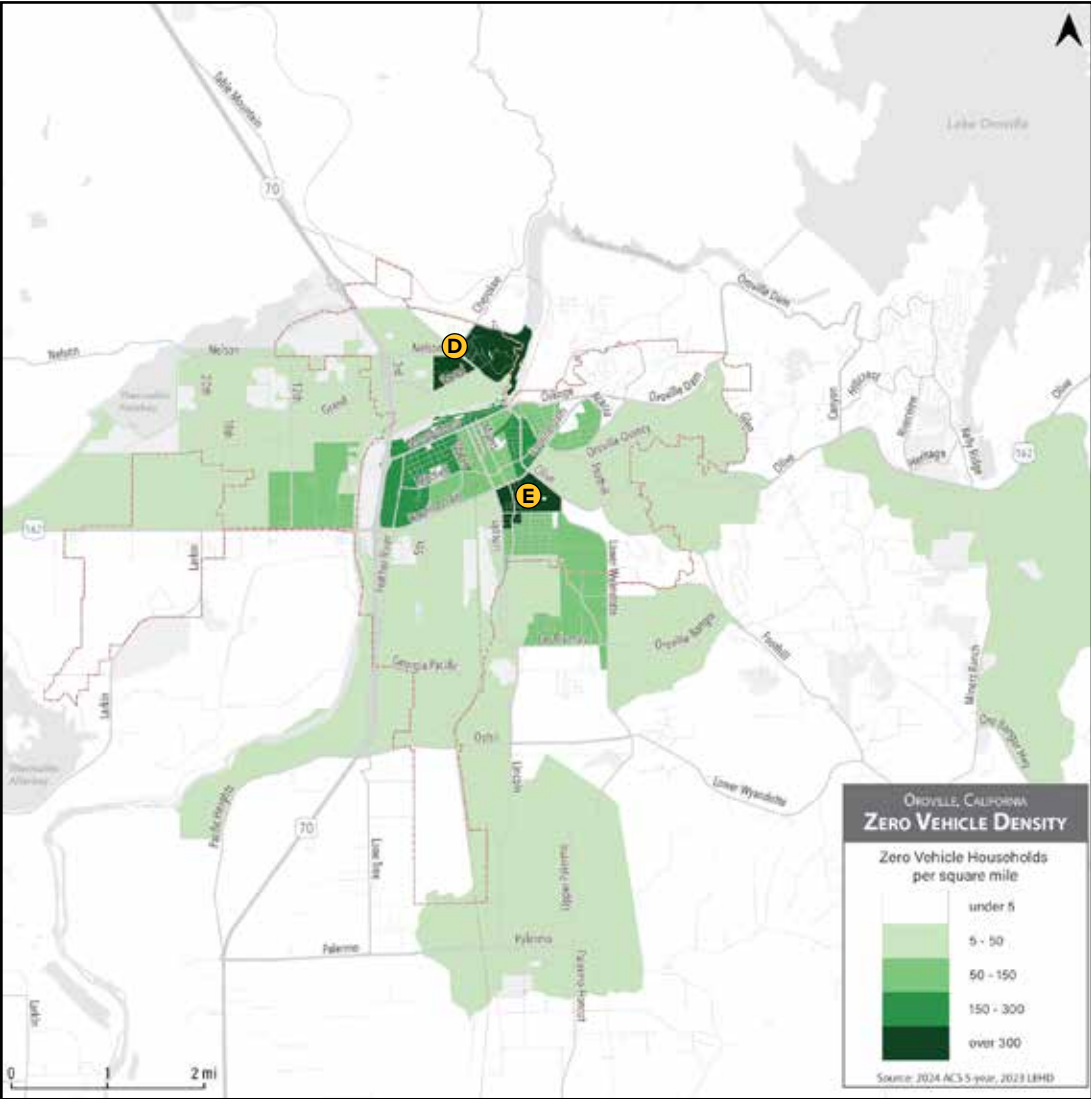


Figure 29: Household without a vehicle per square mile in Oroville



Need: Seniors (Residents aged 65 years and older)

These maps shows where seniors (those over the age of 65) live at high densities. These areas which have a high proportion of seniors tend to have retirement homes or senior-only housing developments within them. Some seniors cannot drive and may be more likely to use transit.

In Chico, senior residents are most concentrated along Lassen Avenue **A**, where senior housing and care facilities supports a higher share of older residents. East Chico along Deer Creek Highway **B** also shows a notable concentration, around some assisted living facilities and developments around California Park Lake.

In Oroville, senior residents are most concentrated in some of the older neighborhoods where some senior housing and facilities area found, just west of the downtown core **C** and in the areas north of the Oroville Hospital on Olive Highway **D**.

Seniors tend to have different transit needs than working-age riders. They may be more sensitive to walking distance and more tolerant of infrequent service, since many are retired and have flexible schedules.

But a transit system optimized primarily for seniors, with low frequency and indirect routes, will be a poor fit for the majority of riders who are employed, in school, or caring for children. This is one reason why a network designed around coverage alone, which tends toward lower frequency, may not serve all groups equally well.

Because transit budgets are limited, agencies must balance coverage for seniors with the frequency and directness that make transit useful for everyone else.

Figure 30: Residents aged 65 and older per square mile in Chico

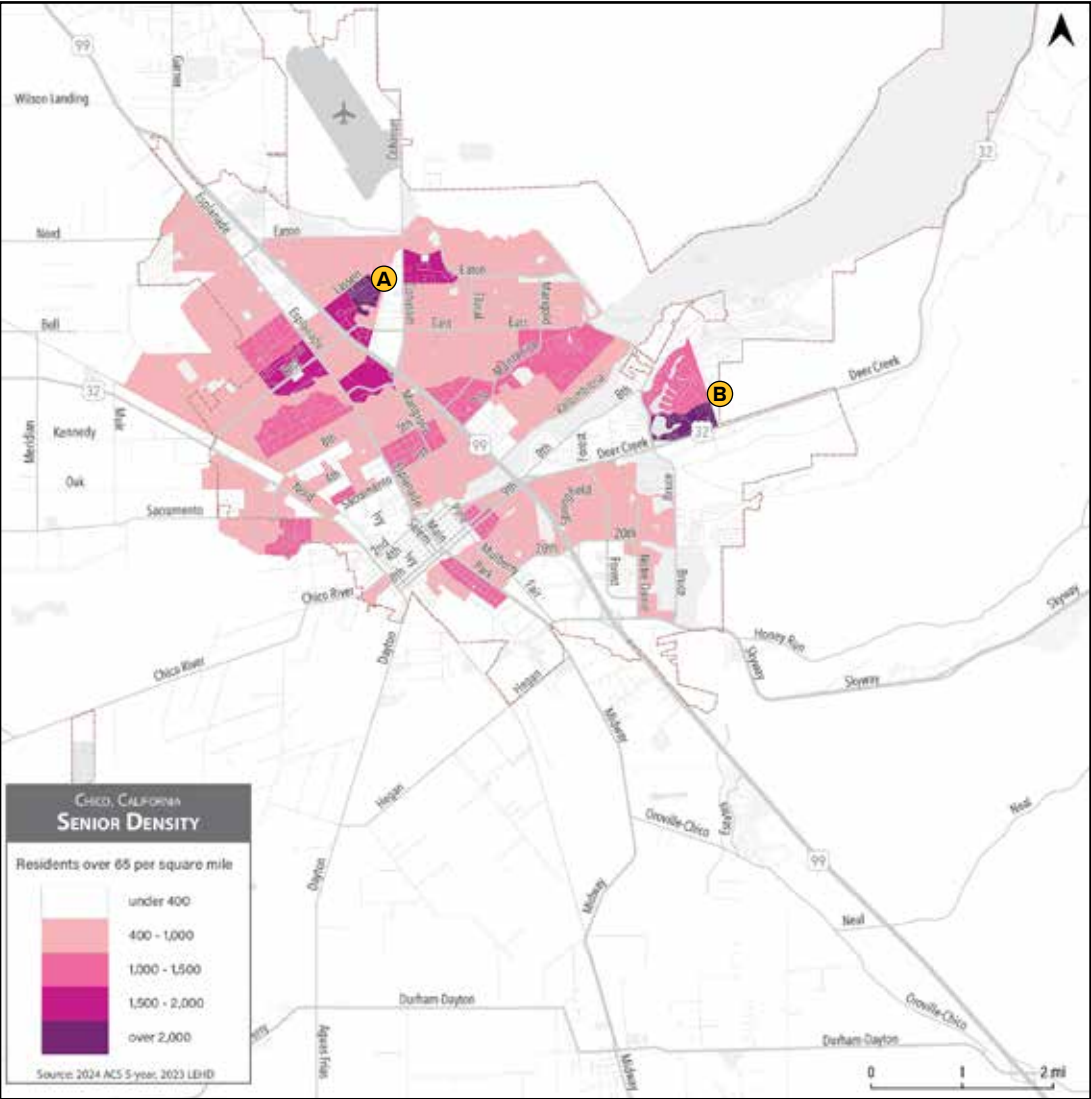
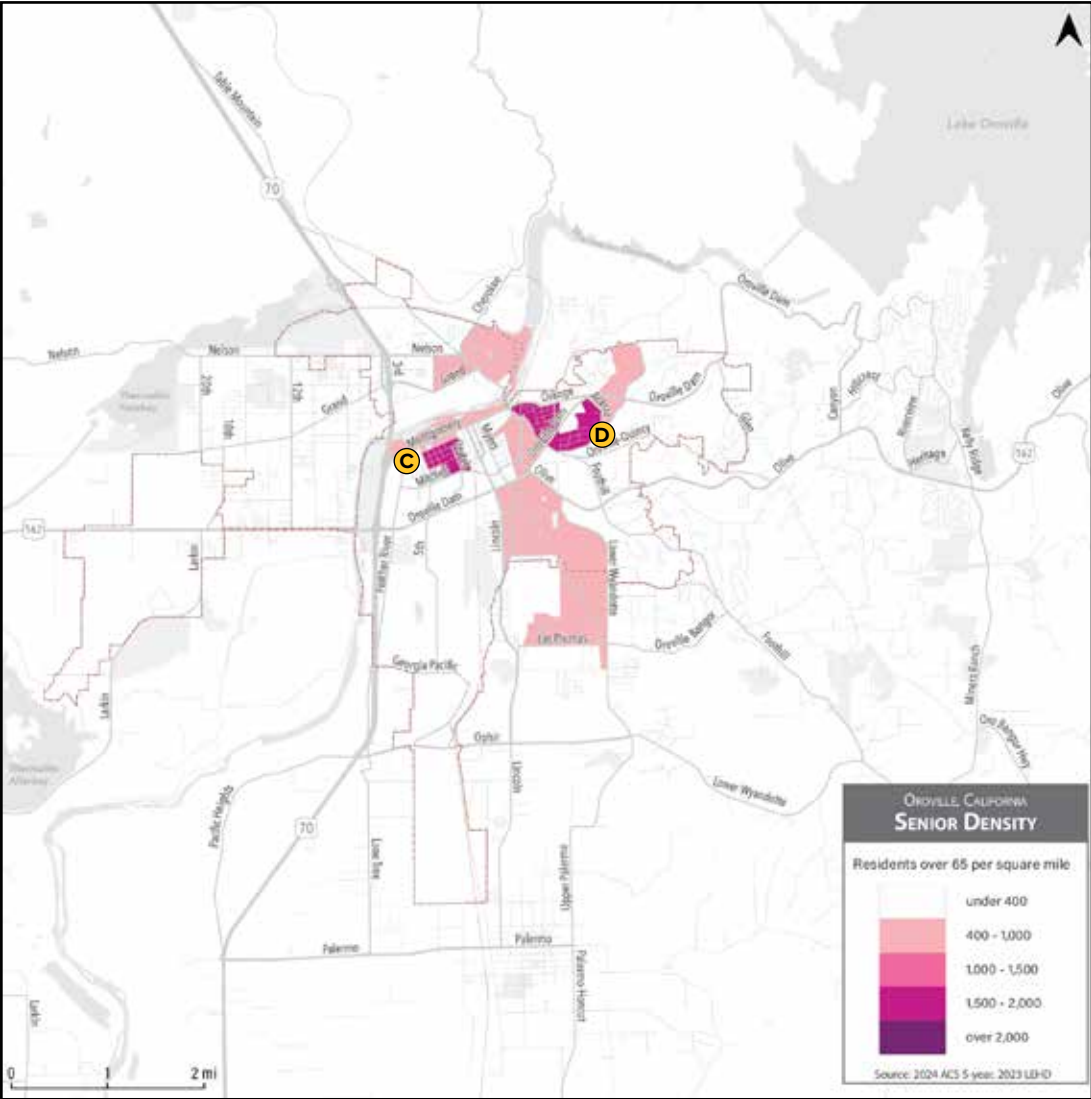


Figure 31: Residents aged 65 and older per square mile in Oroville



Need: Youth (Residents aged 18 years and under)

Just as transit coverage can meet the needs of seniors who cannot or choose not to drive, transit coverage can also meet the needs of children and teenagers who are too young to drive.

High densities of people under 18 also tend to reflect high densities of adults with high demands on their time. Parents often have complex, time-specific travel needs that make fixed-route transit a poor fit. But a network that lets older children travel independently can save parents significant time, and may bring them back to transit as well.

In Chico, youth residents are most concentrated in some of the outer neighborhoods, near Eaton and Esplanade **A**, and along Park **B** just south of Downtown. The neighborhoods in the northeast of Chico **C** also shows elevated density, but in slightly less concentrated numbers.

In Oroville, the two primary areas with concentrations of youth residents are near Table Mountain Boulevard **D**, and around Orange **E** just east of Bridge Street.

Figure 32: Residents aged 18 years and under per square mile in Chico

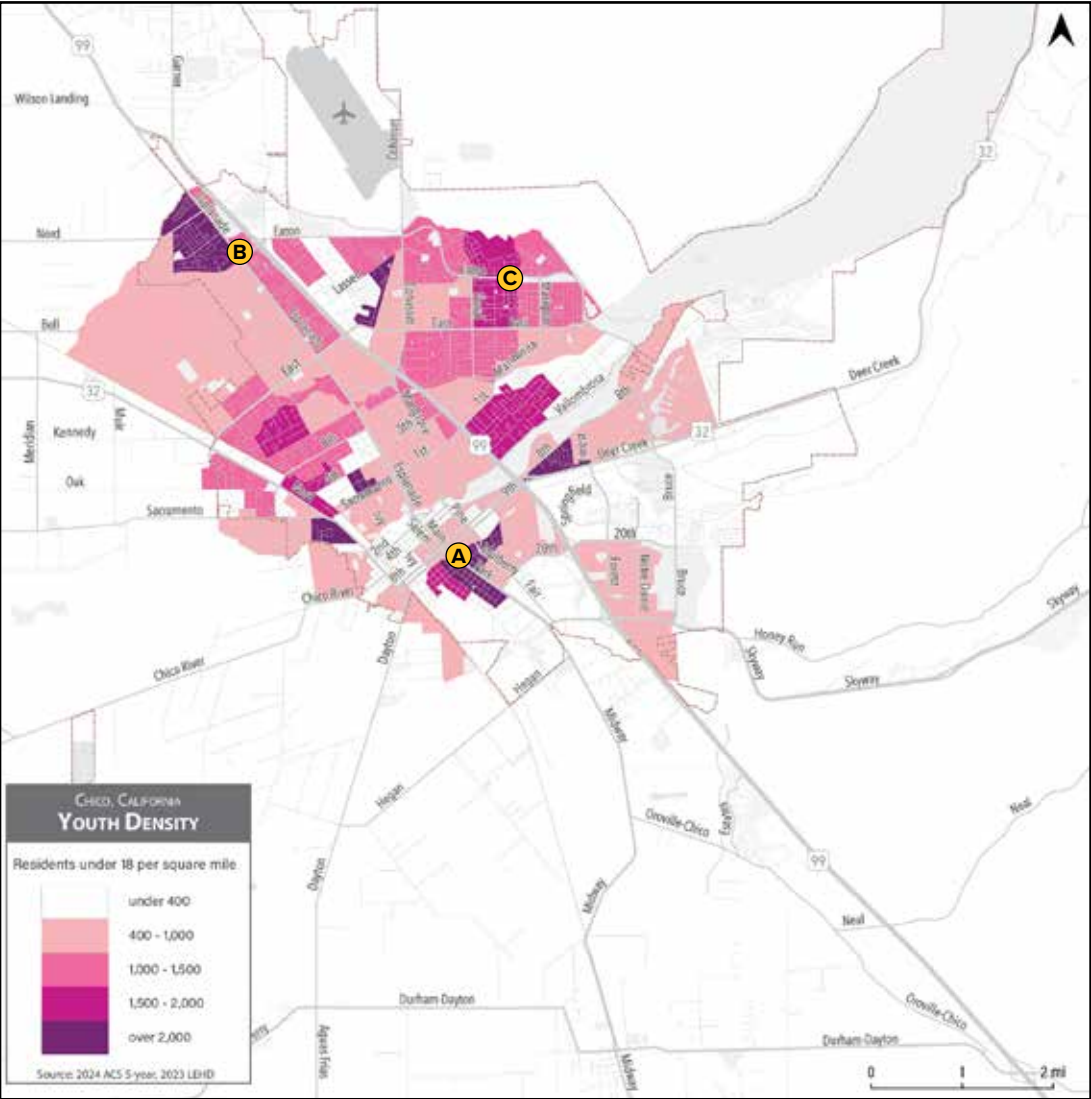
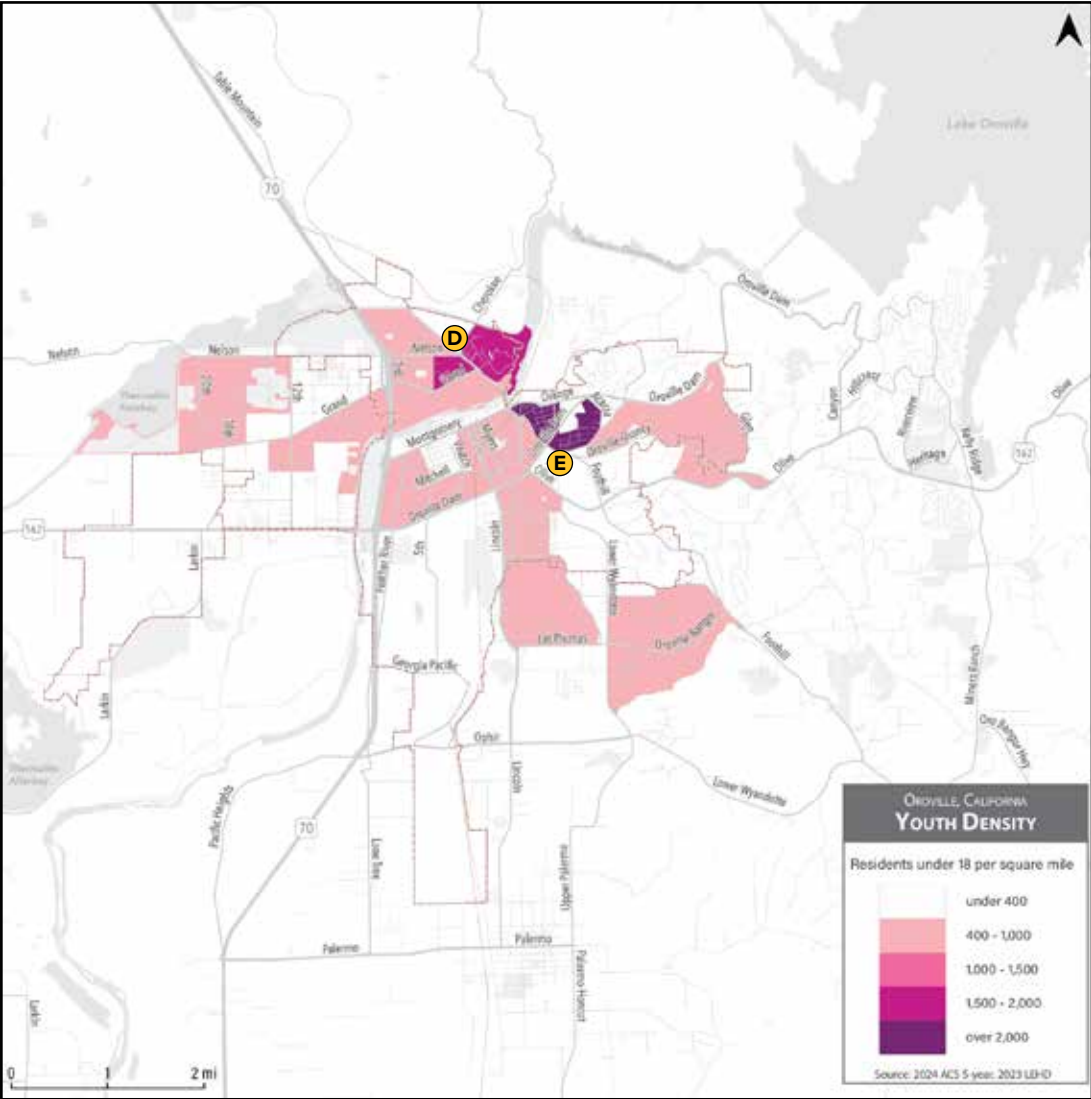


Figure 33: Residents aged 18 years and under per square mile in Oroville



Civil Rights: People of Color

The map at right shows where people of different racial and ethnic identities live. Each dot in the map represents 10 residents, with the different colors representing Race or Ethnicity categories from the US Census. Where many dots are very close together, the overall density of residents is higher. Where dots of a single color predominate, people of a particular race or ethnicity make up most of that area’s residents.

Understanding where people of color live is crucial to fulfilling the obligations of Title VI of the Civil Rights Act and other federal requirements. These federal rules require that B-Line consider the benefits and burdens of transit service for historically marginalized populations.

Butte County overall has an ethnically and racially diverse population. According to the 2024 ACS US Census data, 21% of the population is Hispanic or Latino; 5.9% are Asian; 65.6% are white and not Hispanic; 2.2% are Black/African American; and 5.3% are of mixed or other heritage.

These populations are not evenly distributed across either city. The maps at right show where people of different backgrounds live, which matters when evaluating whether the benefits and burdens of transit service are distributed fairly.

Figure 34: Residents by race and ethnicity in Chico

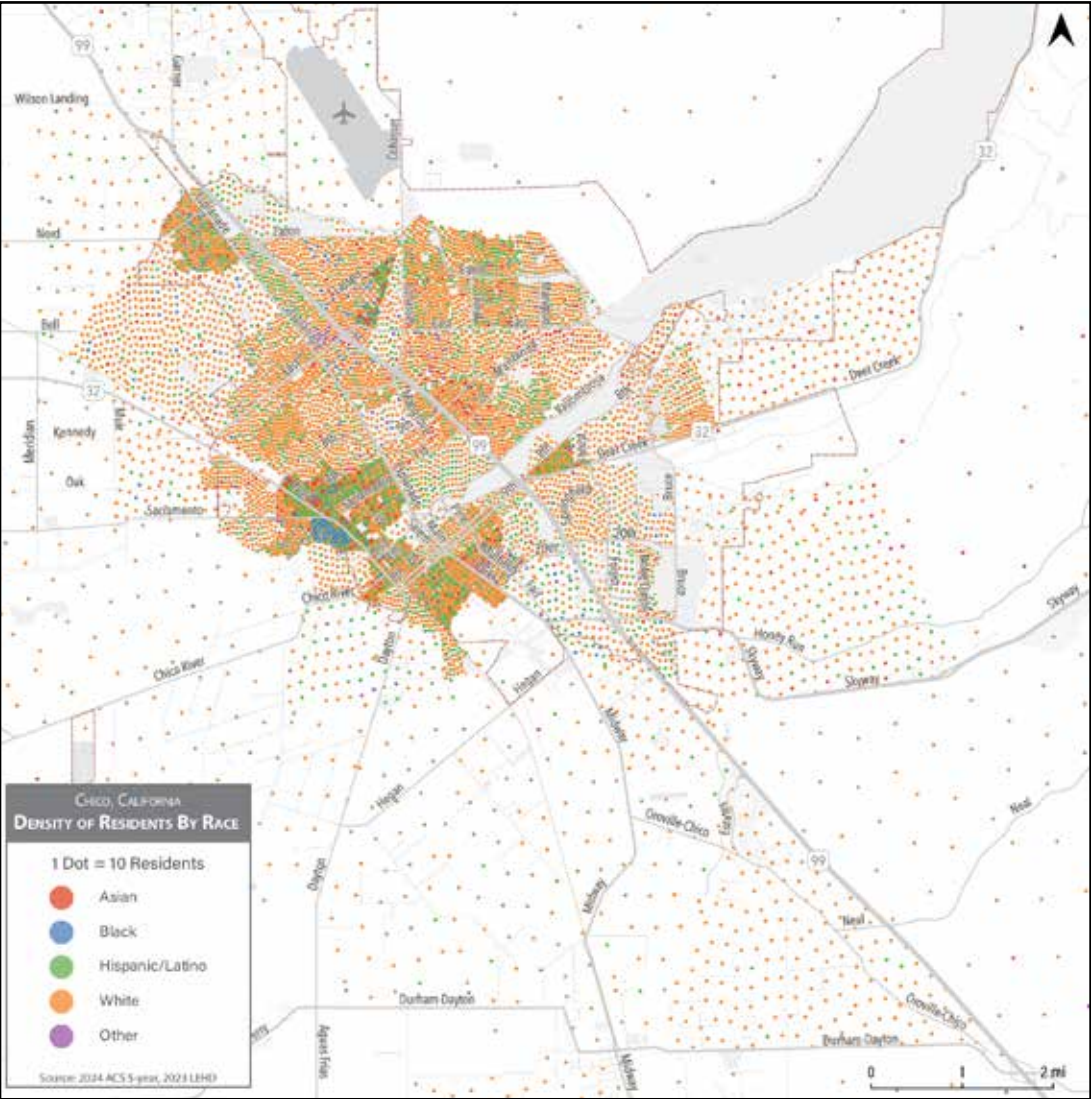
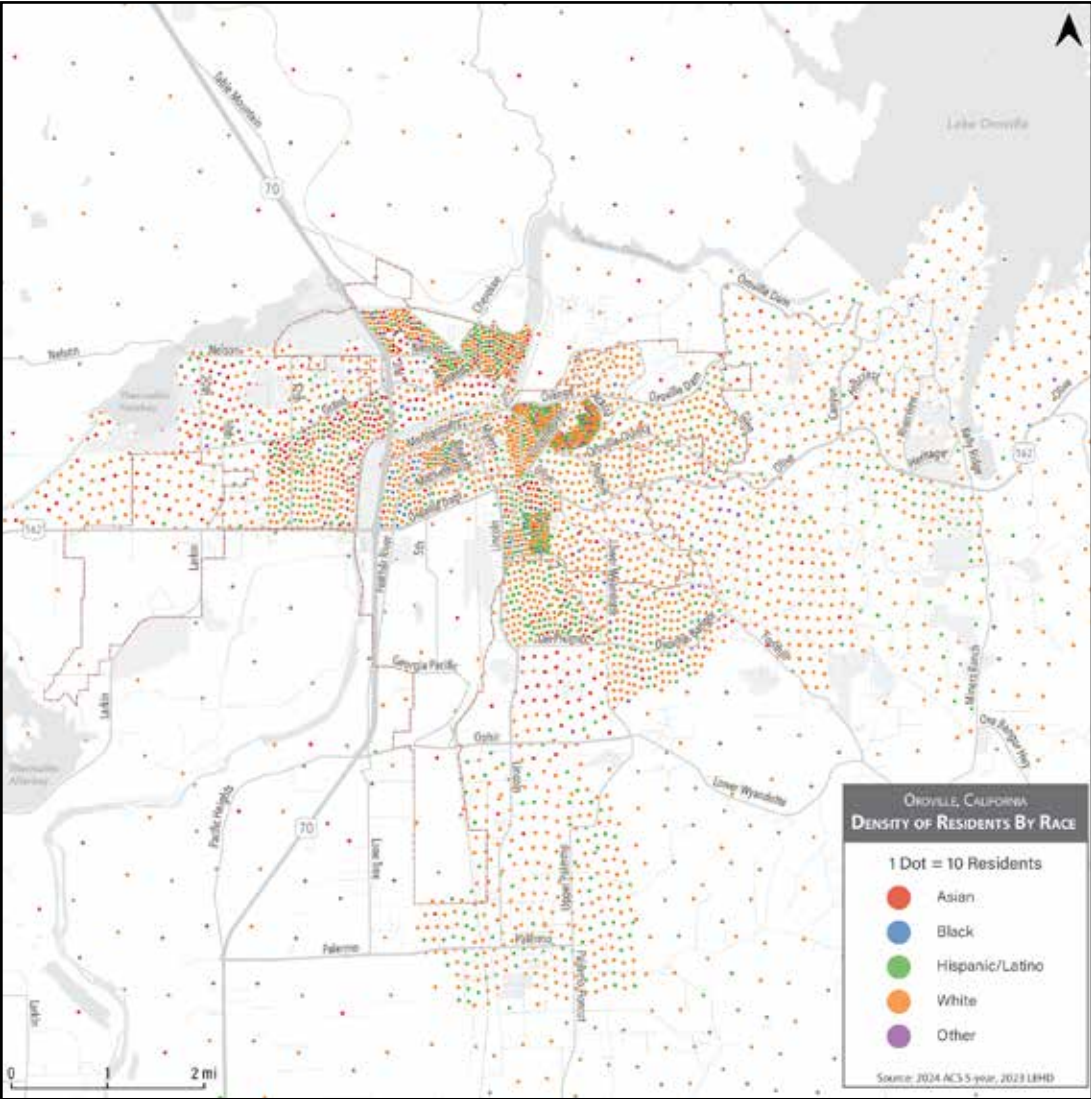


Figure 35: Residents by race and ethnicity in Oroville





4

Existing Network and Performance

Where is service available in Chico?

Chico's Current Local Bus Network

The map at right shows Chico's current local bus network. The network has remained largely unchanged for more than ten years and follows a radial design. This means that most routes start or end at the Chico Transit Center (CTC), which is adjacent to CSUC and downtown at 2nd Street & Salem Street.

Because both downtown Chico and Chico State University are close to the CTC, a single bus ride gets most riders where they are going. Riders traveling between two locations that are not downtown can ride to the CTC, then transfer to another route to complete their trip.

That design requires some riders to transfer, and sometimes to travel out of their way. B-Line reduces that wait by running a pulse system at the CTC: multiple routes arrive and depart at the same time, so most transfers take only a few minutes.

Figure 36: Map of the current B-Line service in Chico

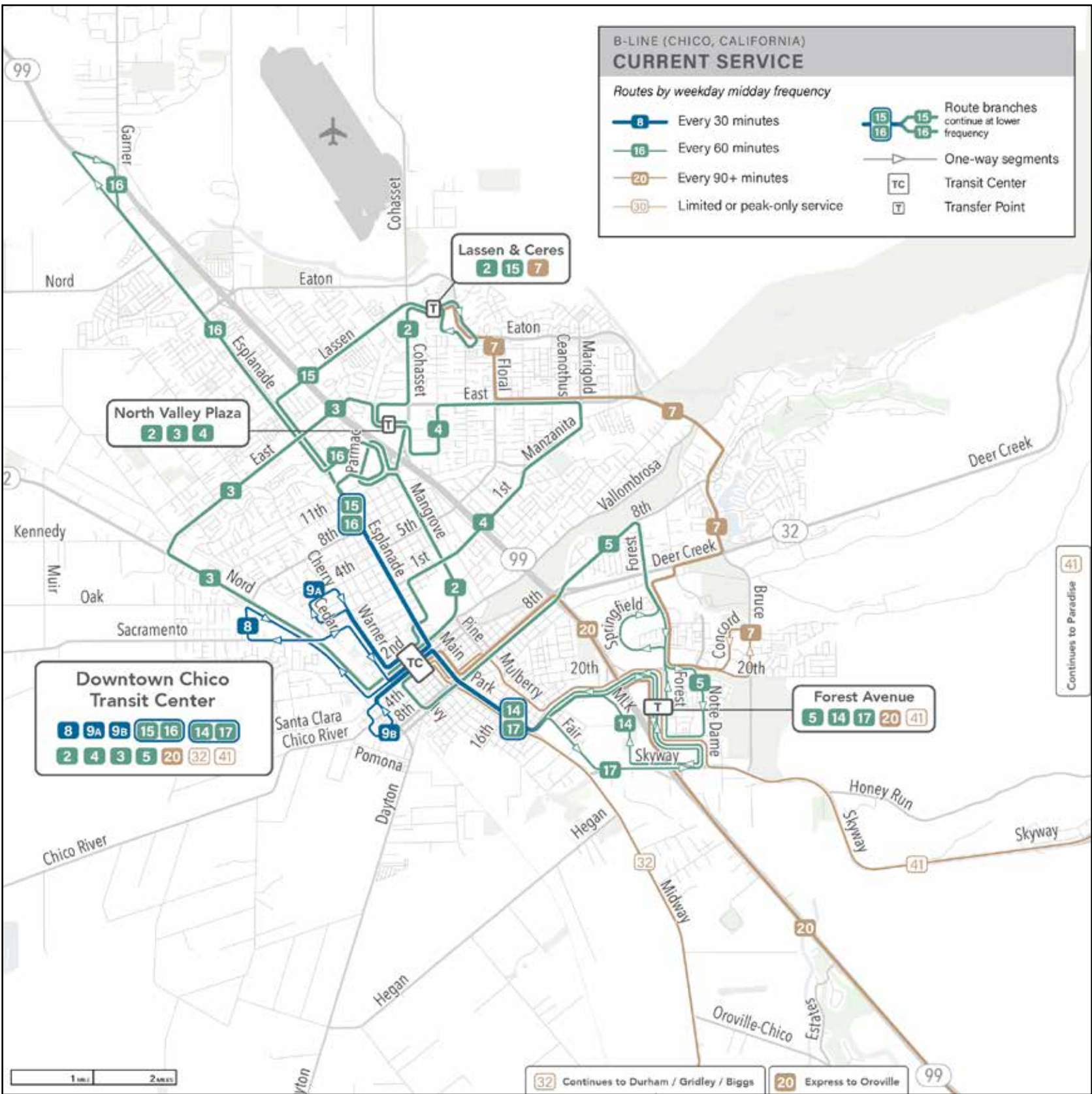
Reading the maps in this report

Line color shows the frequency of bus routes at midday on weekdays:

- **Red** (not on this map) - a bus is scheduled every 15 minutes.
- **Dark Blue** - a bus is scheduled every 30 minutes.
- **Green** - a bus is scheduled every 60 minutes.
- **Tan** - a bus is scheduled every 90+ minutes, most commonly every 2 hours in the current network.

Route badges with hollow (outlined, unfilled) coloring represent peak-only express or limited-service routes. For B-Line, these are most common on the regional routes, which fall outside the scope of this study.

Sometimes, a route changes frequency but continues, and our maps show this with a change of color. For example, along the southern part of Esplanade, Routes 15 and 16 merge, so that these two hourly routes (green) together form a half-hourly route (blue).



Where is service available in Oroville?

Oroville’s Current Local Bus Network

A map of the local Oroville transit network appears at right. This network centers on the Oroville Transit Center and has remained largely unchanged for the past 10+ years.

Oroville runs fewer overall routes and tends to operate at lower frequencies than Chico. There are no 30-minute routes, and four routes operate every 60 minutes during the week. Note that many of Oroville’s routes operate in only one direction. This design extends bus access to more areas overall, but reduces the usability of the service.

For example, someone catching a bus in Thermalito, near Grand Avenue and 12th Street, would need to ride north along Grand Avenue before reaching downtown. If this rider were traveling to Mitchell Street, or to Oroville Dam Boulevard and the Feather River Boulevard, they would need to travel out of direction through the Transit Center. One-way service makes the return trip unreliable.

Oroville also uses “Flag Stops” (see call-out box for more details). Many of these flag stop zones sit along road segments with high speeds and limited sidewalk infrastructure. While the map shows where a rider could flag down a bus, conditions along many of these corridors currently make safe pick-up and drop-off difficult for both riders and drivers. As part of this study, we will identify specific locations where fixed stops with proper infrastructure could replace flag stop segments, making service safer and easier to use.

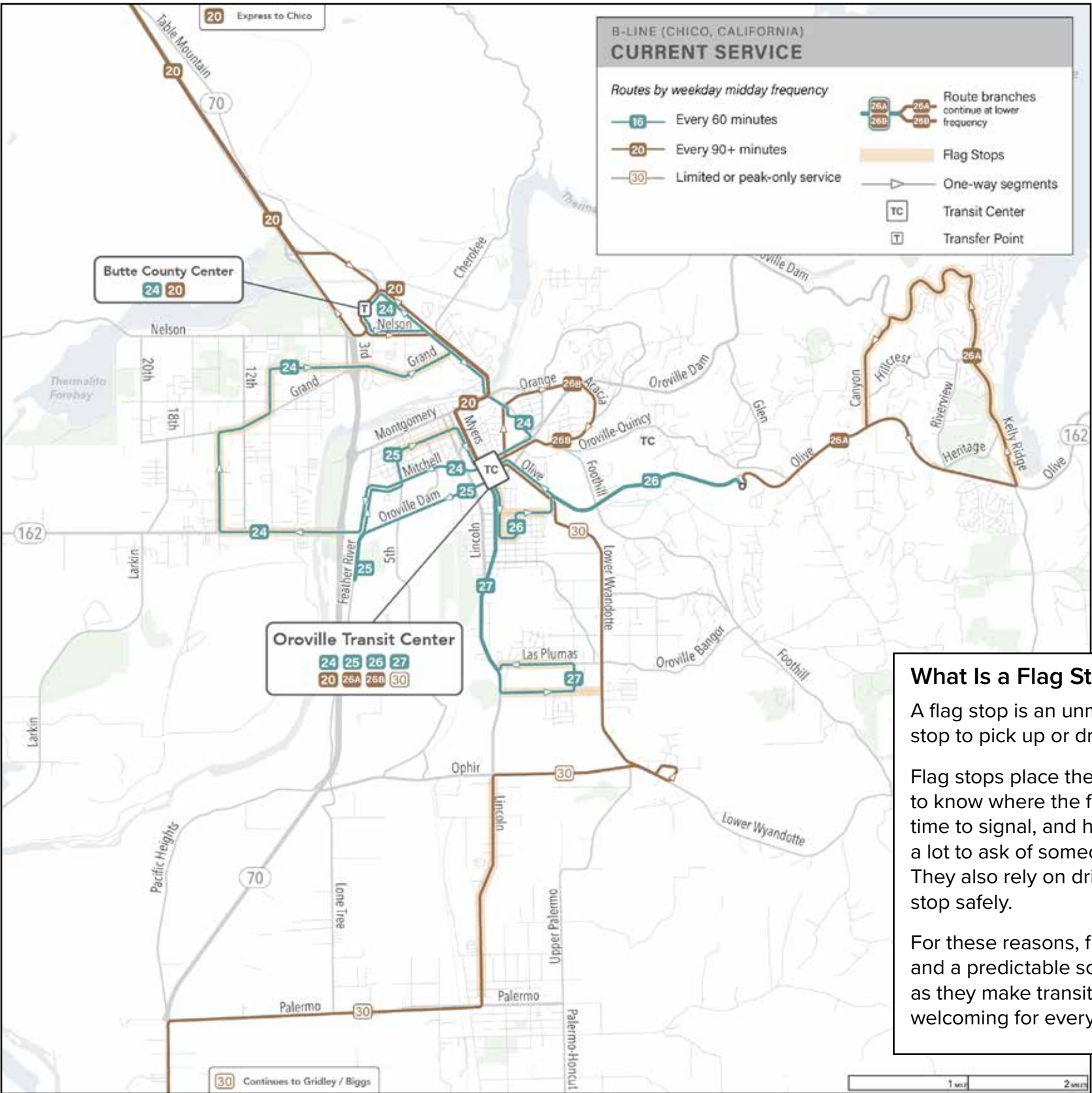


Figure 37: Map of the current B-Line service in Oroville

When is service available?

B-Line runs local and regional routes at varying frequencies and spans. The chart on the right summarizes each individual route’s level of service.

Chico’s Local Service

Most of Chico’s local service operates every 60 minutes during weekdays. The CSUC campus routes (Route 8 and Route 9) operate every 30 minutes during most of the day.

There are two combined frequency corridors, where two routes combine to provide 20-minute rush hours and 30-minute midday frequency along their shared corridors.

These are Route 14 and Route 17 combining along the Park corridor and Route 15 and Route 16 combining along Esplanade.

Oroville’s Local Service

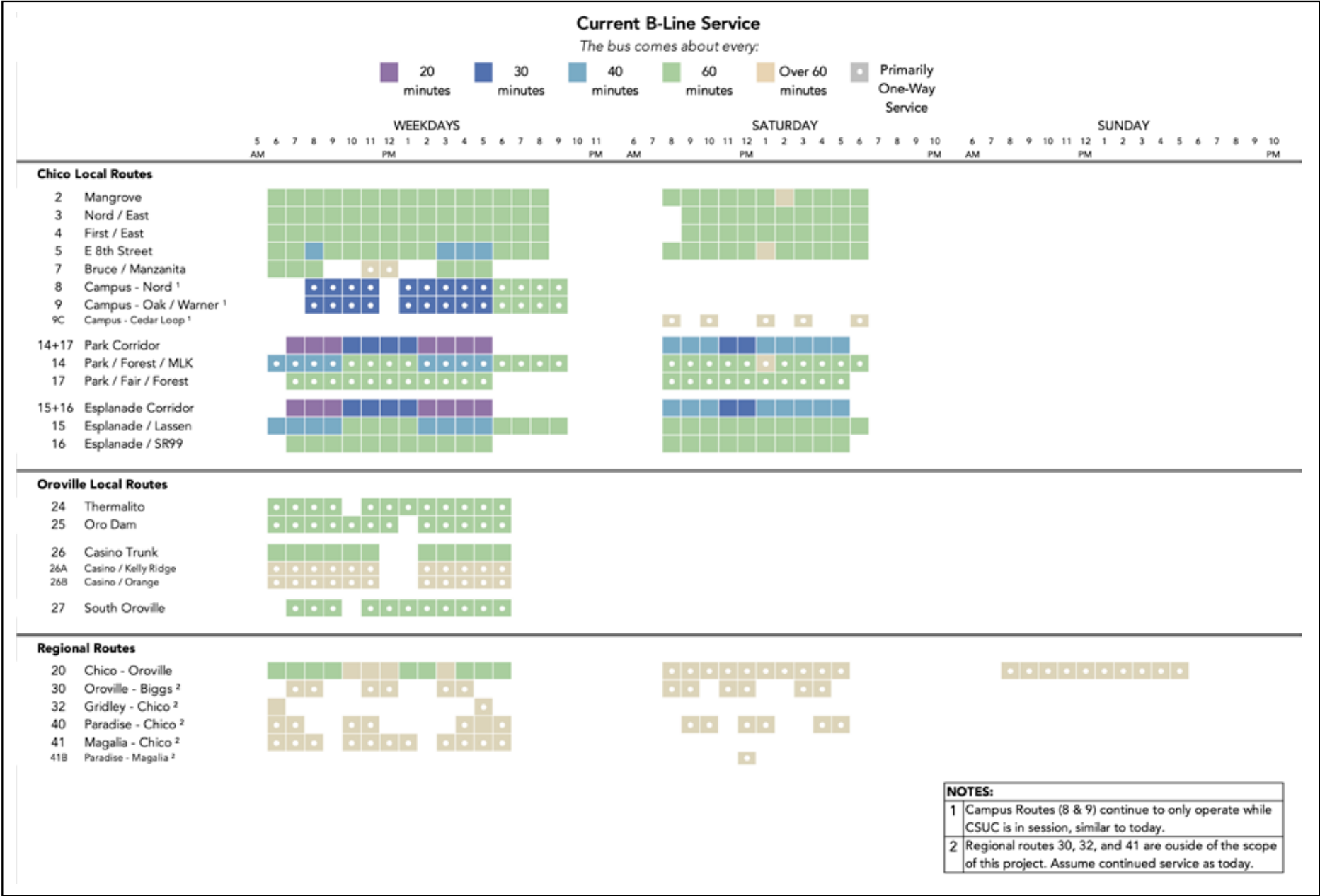
Oroville’s local service runs fewer total routes at lower frequencies than Chico’s. Most of the routes operating in Oroville are one-way services. Symbolized on the table with a white dot within the colored block.

Route 26 operates a pattern where every 2 hours (120 minutes) a branch extends off of the Casino trunk line to connect to Kelly Ridge, or to the Orange neighborhood in east Oroville.

Regional Route 20

Route 20, which helps connect the Skyway area and the Chico Transit Center to the County Center and Oroville Transit Center, operates every 60 minutes during rush hours, but reduces to every 2 hours (120 minutes) midday and on weekends. Weekends also see the service changes to provide more one-way service within Oroville.

Figure 38: Table showing individual route frequencies and spans under the Existing B-Line Network



Weekend Service

Overall, B-Line sees a significant reduction in service on weekends. Chico maintains a reduced level of service on Saturdays but runs no local service on Sundays. Oroville has no local weekend service at all. Route 20 is the only route that operates on Sunday, meaning that most riders cannot count on transit being available seven days a week.

For people who work weekend shifts in retail, hospitality, or healthcare, or who rely on transit to reach medical appointments and family, this gap in service can mean transit simply is not an option on the days they need it most.

Where are people riding transit?

The maps at right show the average daily weekday boardings across the bus networks in Chico and Oroville. This data was collected between August and December 2025.

In both maps, there are some medium ridership areas that are more scattered or isolated. Most of them are attributable to specific generators like big apartment buildings, social service providers, or large retail areas.

Chico

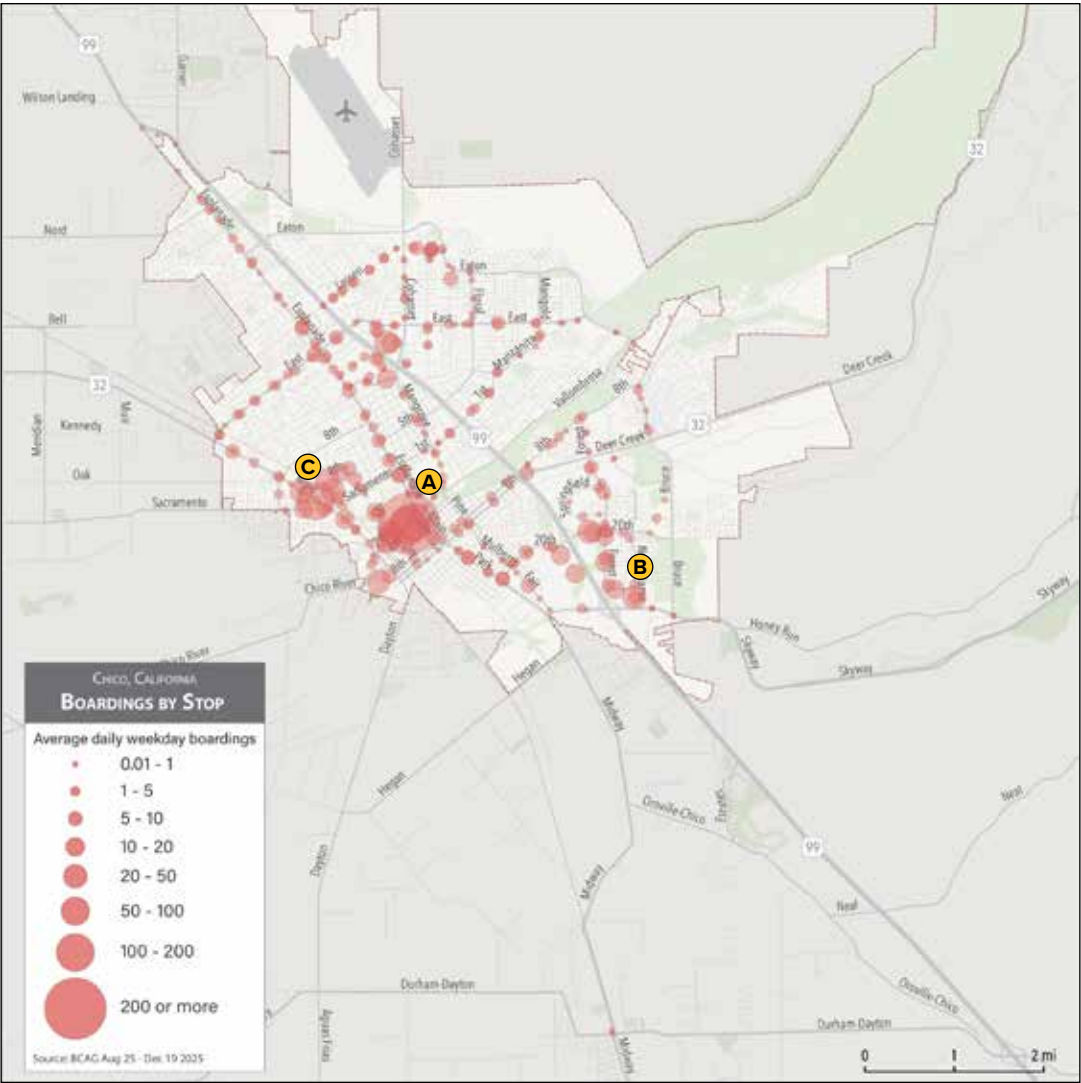
High ridership areas and corridors can appear in two different ways on this map: either as a few large dots, or as multiple medium sized dots that are very close to each other.

- **A** Downtown Chico and the Chico Transit Center show the highest ridership in the network. This is the combined effect of CSU Chico, which is directly adjacent to the transit center, and the high number of riders changing buses here.
- **B** Skyway, 20th, and Forest area in Southeast Chico has a large concentration of destinations. Chico Mall, Butte College's satellite campus, and a series of big box stores all generate high demand in this area.
- **C** The student housing north and west of Chico State University generates high ridership on the two campus routes (Routes 8 and 9) and on nearby local routes, particularly Route 3.

Oroville

Oroville's overall ridership is lower than Chico's. This reflects both the lower density of residents and jobs in the area and the lower service levels, fewer total routes, lower frequencies, and more one-way operation.

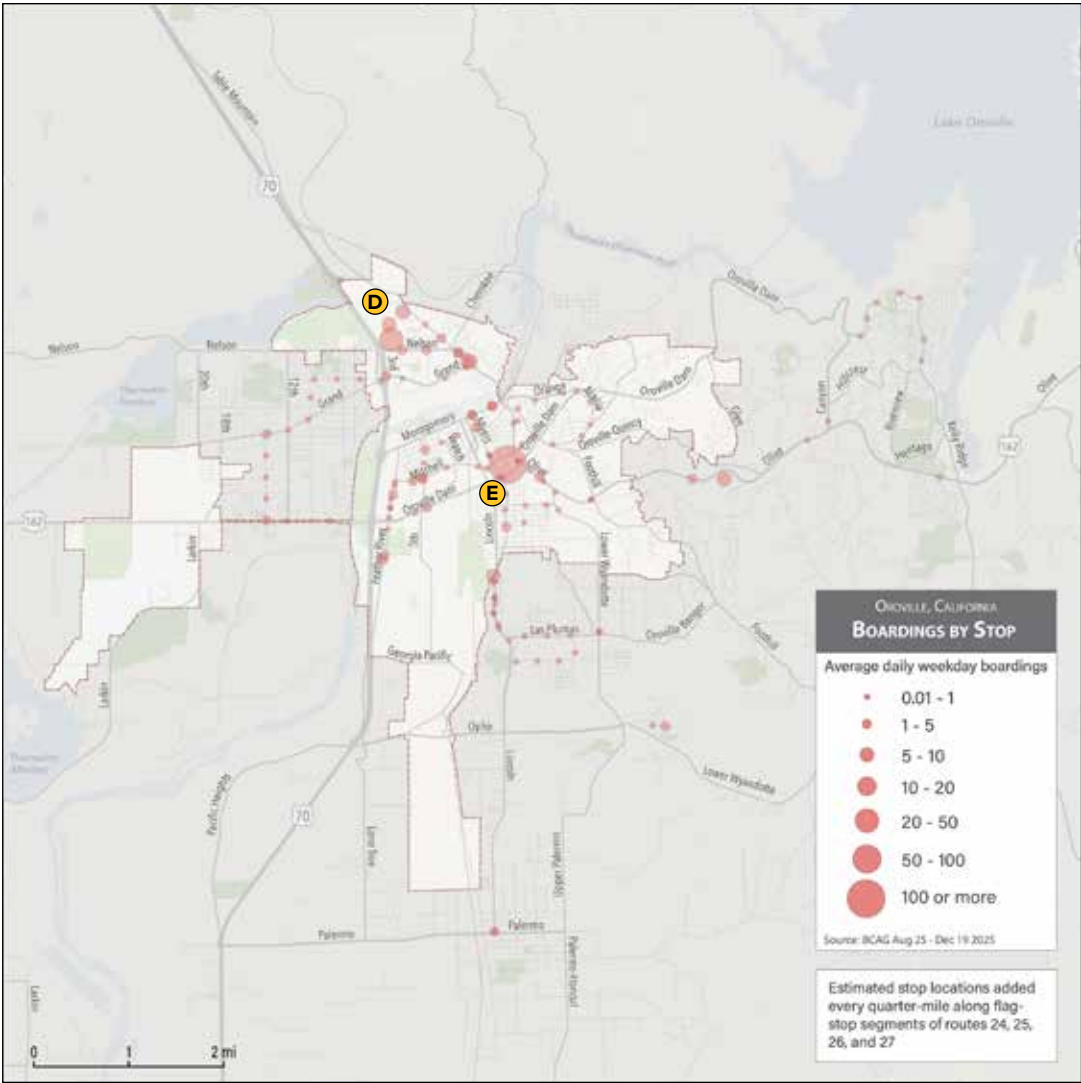
Figure 39: Average weekday boardings on current routes in Chico



Even so, a few high-ridership areas stand out.

- **D** The County Center facilities, including the Butte County Superior Court and the Butte County Jail, are a concentration of high boardings. This area is served by both intercity Route 20 and by the local Route 24.
- **E** The Oroville Transit Center facility is the largest single boarding dot in Oroville. Located near several shopping destinations, the transit center is where riders transfer

Figure 40: Average weekday boardings on current routes in Oroville



between routes. With Oroville's radial transit network, these connections are vital for traveling within Oroville or connecting to Route 20 to Chico.

Downtown Timed Connections

Timed Connections ('Pulse')

Most destinations require more than one route to reach. Connections allow people to travel in many directions to reach far more destinations than any single route could serve on its own.

Most agencies at B-Line's scale plan around connections rather than offering a direct ride from every origin to every destination. Connections make it possible to connect many origins and destinations while maintaining the highest possible frequency. Everyone would like a direct bus from their home to their destination, but such a network would have too many overlapping routes, none of which could be operated frequently enough to be useful.

In bigger cities, many routes run every 15 minutes so it is easy to make connections wherever lines meet. In Butte County, typical frequencies are in the 30-60 minute range, if not lower, and this requires timed transfers, also called pulse scheduling.

With a timed connection, several routes arrive at a transit center at the same time and depart five minutes later, giving riders a short, predictable window to connect between routes.

B-Line already provides some timed connections in Downtown Chico and Downtown Oroville, and this tool is likely to continue to guide the design.

Building a pulse system has clear advantages:

- Riders transferring between two routes can often complete that transfer with only a short wait, even if their overall trip requires riding out of direction to reach the hub.
- This makes transfer-based trips faster and more predictable, which is especially valuable in a radial network where most trips eventually pass through a central point.

How a Timed-Transfer (or Pulse) Works

1. Routes are designed to come together at one central location. Buses can terminate here or simply stop along their route.
2. Buses come together and wait for a few minutes allowing people to transfer from one bus to another.
3. Buses depart at the same time and continue their trip.

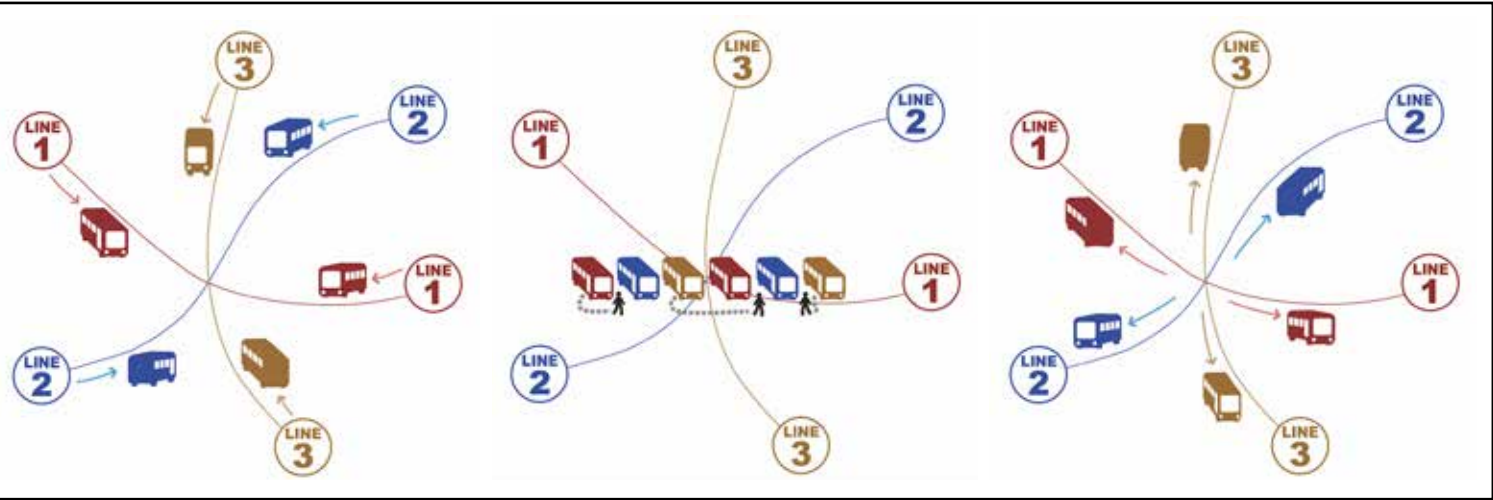


Figure 41: Photo of the Downtown Chico Transit Center, located across the street from CSUC Campus.



Figure 42: Photo of the Oroville Transit Center, located near Oroville Dam Boulevard and Olive Highway.



The Relationship between Frequency and Ridership

Productivity measures ridership relative to cost. It's calculated as boardings per service hour, where a service hour is one bus operating for one hour:

Productivity = Ridership ÷ Cost = Boardings ÷ Service Hours

Productivity is strictly a measure of achievement towards a ridership goal. Routes that are designed for coverage goals will likely have low productivity. This does not mean that these routes are failing or that the transit agency should cut them. It just means that their funding is not being spent to maximize ridership.

Productivity by Frequency of Service

The scatter plot at right shows the individual routes from B-Line, each plotted according to their midday frequency (on the horizontal axis) and their productivity (on the vertical axis). Route frequency is expressed as a number of minutes between consecutive buses on a route, so a lower number indicates a higher arrival frequency.

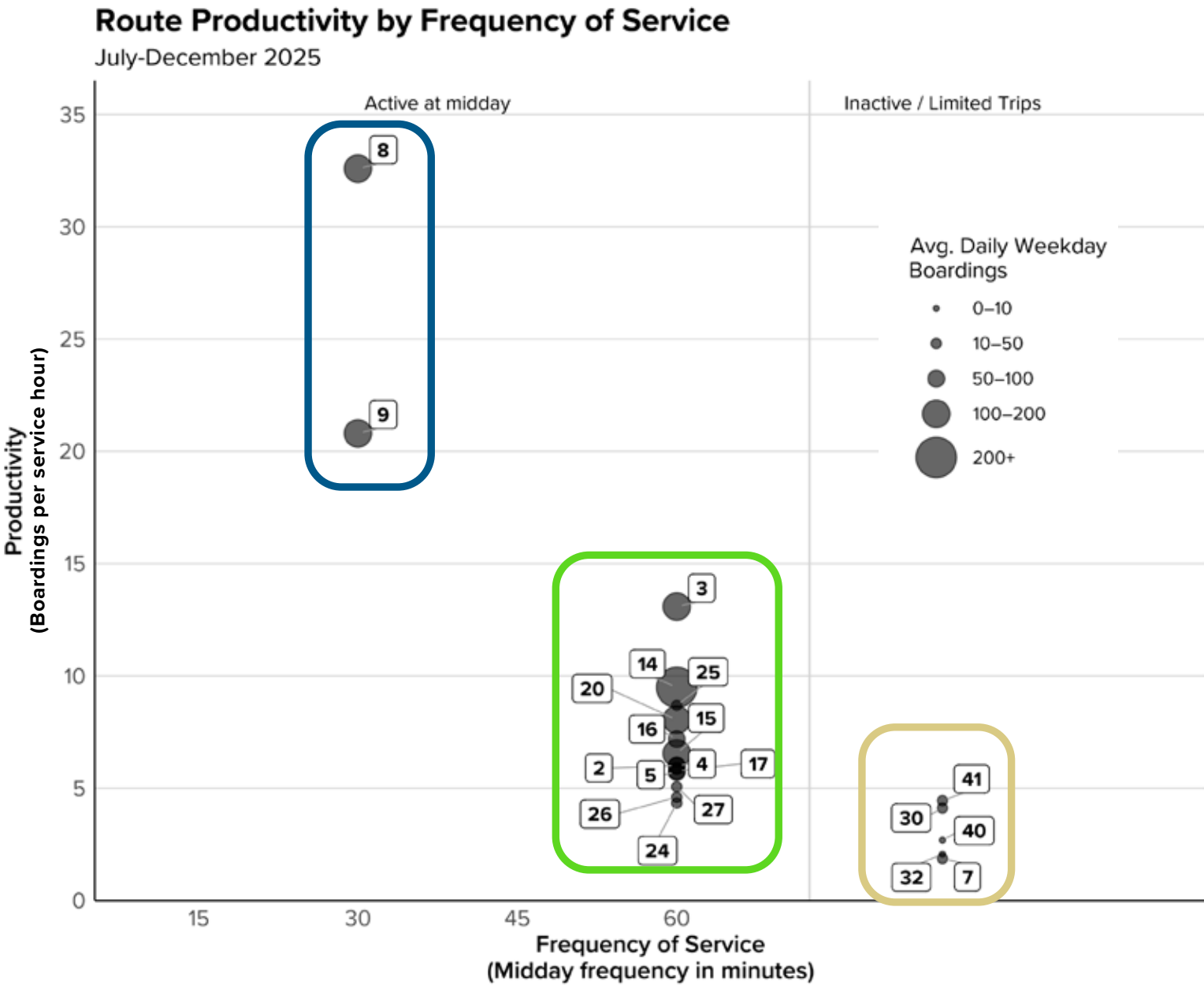
The pattern reflects a common industry trend. More frequent routes tend to have higher productivity, even though higher frequency costs more in service hours. This happens because frequent service is the most useful and convenient option for riders, which leads agencies to target it toward their strongest markets. When frequent service reaches a dense, walkable area, high ridership typically follows.

This pattern is clear in the chart, where routes group naturally by frequency: blue 30-minute routes rank highest in productivity, green 60-minute routes rank in the middle, and tan routes with limited service (90+ minutes) rank lowest.

While the relationship between productivity and frequency is the most important point, it's also interesting to look at the outliers, services that score especially high or low compared to others of the same frequency:

- **Routes 8 and 9**, the campus routes serving Chico State University and nearby student housing, operate at higher frequencies and only run while CSUC is in session. Both factors yield higher productivity. (Not running in summer isn't good for ridership, but it is for productivity).
- **Route 3** is the most productive local route outside the campus routes. It runs along Nord Avenue, adjacent to CSUC, connecting North Valley Plaza to the Chico Transit Center, making it useful both for local travel and for students traveling to shop.
- **Route 20**, despite being a long distance intercity route, shows productivity near the top of the local route range. This suggests the corridor between Chico and Oroville is serving strong demand and has potential for growth. More consistent all day frequency, extended weekend hours, or two-way scheduling could all increase ridership further.
- **Routes 27, 26, and 24** in Oroville each produce fewer than 5 boardings per hour. That is the lowest productivity of B-Line's hourly services. The current route designs may not be working for the people they are meant to serve.

Figure 43: Scatter plot illustrating the current B-Line Routes by their midday frequency (on the X axis) and each route's productivity, measured as boardings per service hour (on the Y axis).



Investing in Evening and Weekend Service

Evening & Weekend Service

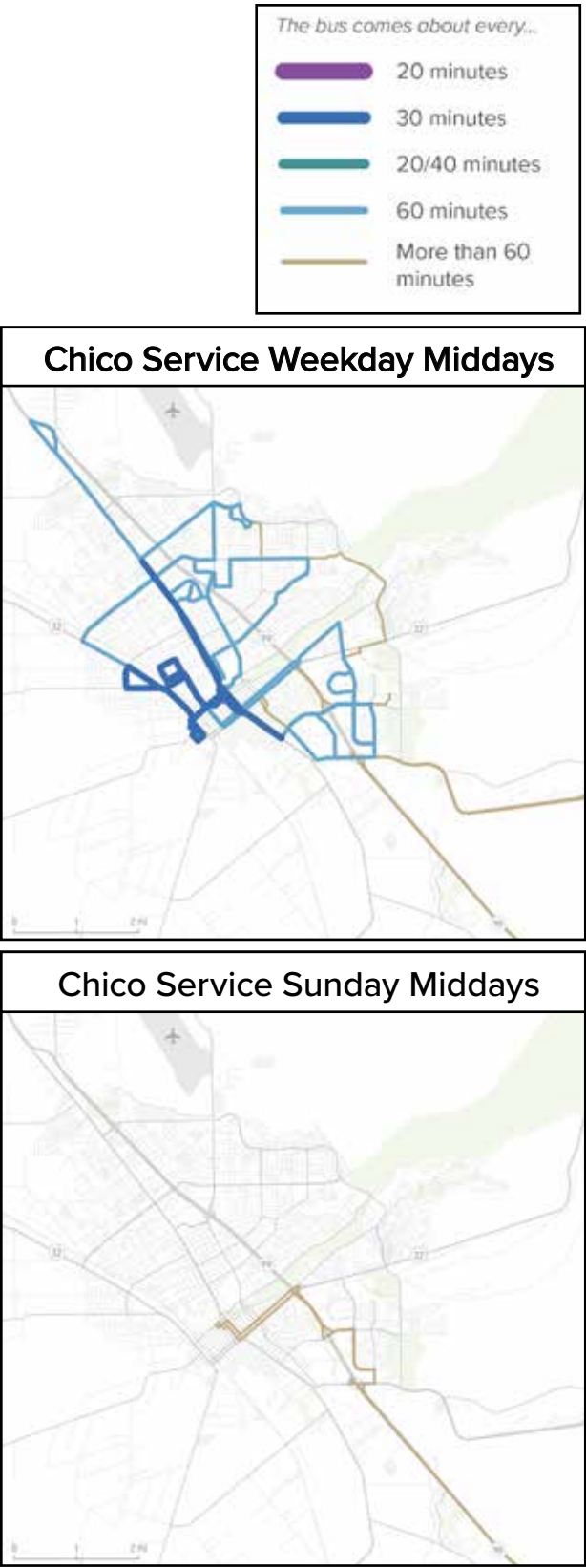
A related choice is how much service to provide outside of typical weekday daytime hours, in the evenings, and on Saturdays and Sundays.

Focusing service on weekday daytime hours has clear advantages:

- Weekday daytime trips typically account for the largest share of overall ridership, so concentrating service hours here tends to produce the highest ridership per service hour.
- This approach avoids the added cost of running buses, drivers, and facilities during periods when demand, and fare revenue, is lowest.

But scaling back evening and weekend service has real costs:

- Many service and retail jobs operate evening or weekend shifts, meaning workers without a car may have no way to get to or from work outside daytime hours.
- Many medical appointments, social activities, and community events happen outside the traditional Monday to Friday workday.
- For someone without a car, no evening or Sunday service does not mean a longer wait. It means transit is not an option at all.



Many transit agencies are finding weekends to be a growth opportunity, and some are now even exceeding pre-Covid ridership on weekends because they have invested in service then.



5

The Network Concepts

Introduction to the Network Concepts

Conceptual Networks

To help the community think about the trade-off between ridership goals and coverage goals, we have developed two contrasting concepts for how the network might evolve. Both concepts fit the financial resources of B-Line, but they deploy those resources according to different priorities.

Neither network is a proposal. Instead, the purpose is to help people see the consequences of preferring one goal or the other, so that they can tell us what balance of these competing goals they would prefer. Ultimately, the Board will make the decision in light of the public discussion.

The Coverage Concept

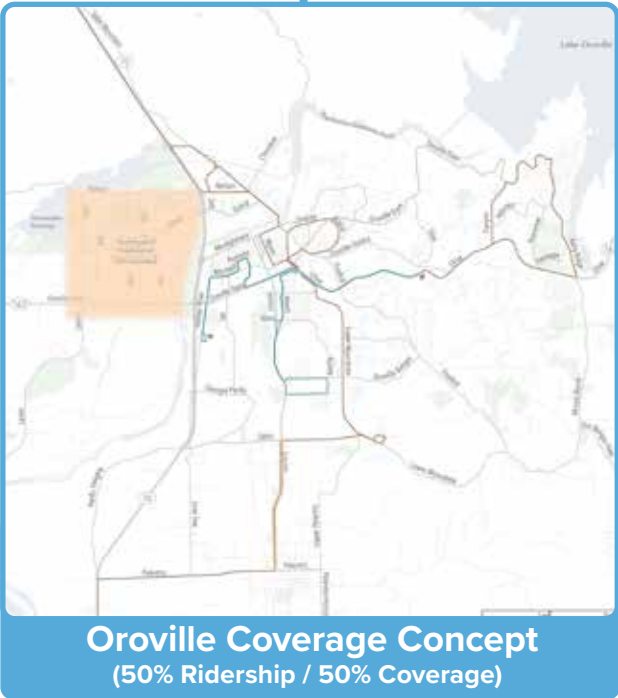
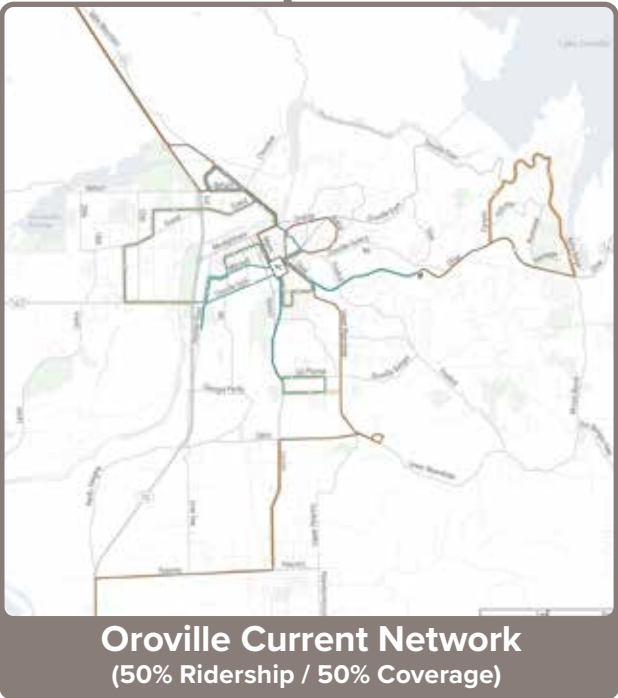
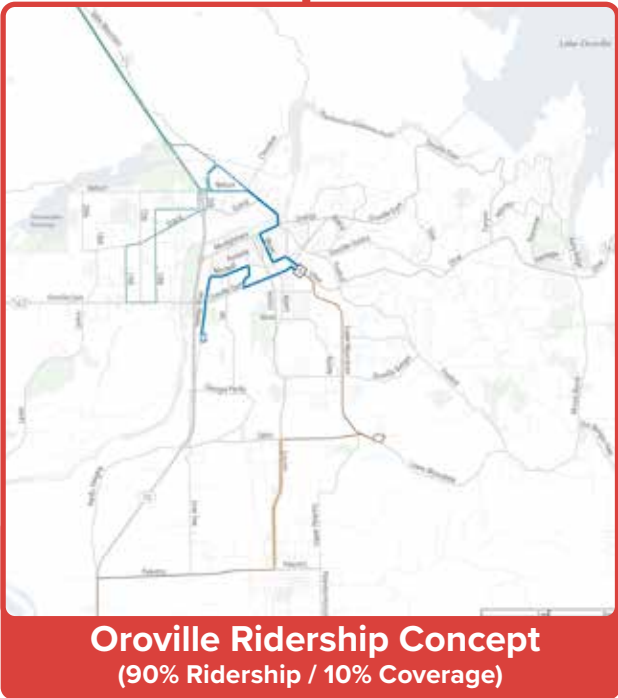
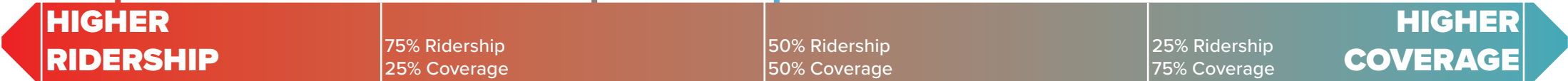
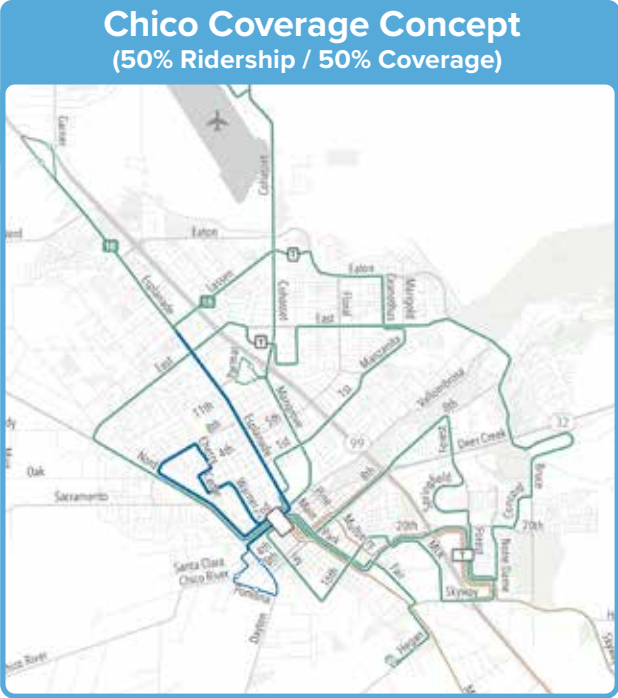
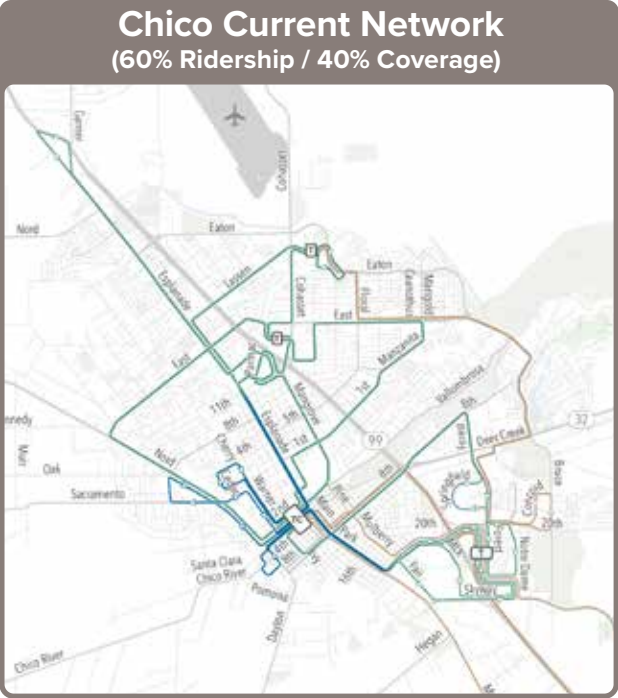
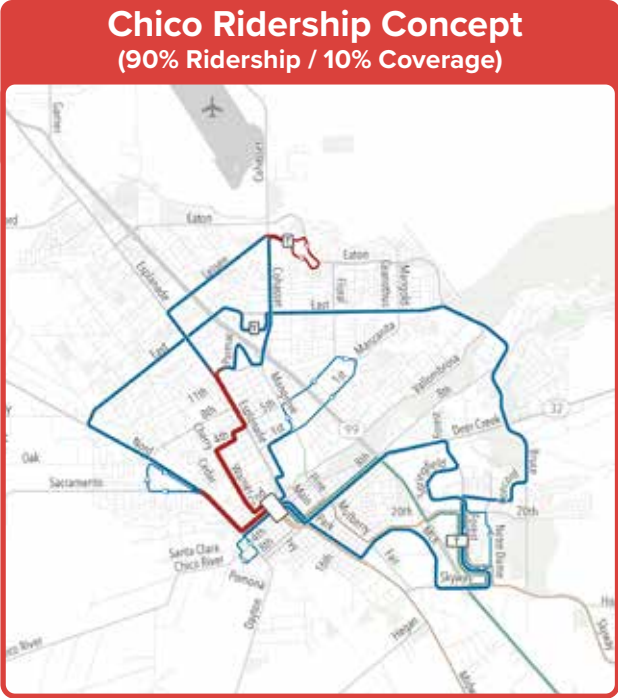
In the Coverage Concept, the goal was to maintain or improve service to everyone that has access today.

The concept looks similar to existing service, as the current network is coverage-focused, but with route changes that extend service to newer developed areas and requested destinations.

The Ridership Concept

The Ridership Concept reduces the area served. The areas that lose service are generally lower-density neighborhoods where ridership is currently lowest.

This in turn means that service can be concentrated to produce service every 15 minutes in the highest ridership corridors, and a standard of 30-minute frequency for the rest of the network. Route 20 is also improved to operate an all-day 60-minute frequency.



Network Concept Assumptions

Assumptions

In designing these concepts, a few key assumptions have been made regarding the future of transit in Chico and Oroville.

Service Areas

Each concept is built within the same overall service budget. Chico and Oroville each have their own local service budget, and those budgets are held constant between the two concepts. That means a decision about network design in Oroville does not affect what Chico can offer, and vice versa.

Route 20 is the one exception: it connects the two cities and draws from a shared pool of resources. Decisions about Route 20 will be made when the Draft Network Plan is developed later in this process.

Service Budget

The two developed concepts illustrate alternative approaches to transit service in Chico and Oroville’s local bus networks. The budget for both networks was assumed to use Transportation Development Act (TDA) funds allocated to each local network’s service area.

For Chico, this encompasses the city of Chico, while for Oroville, it includes the city of Oroville along with the unincorporated communities of Thermalito, Kelly Ridge, and South Oroville. All areas currently served by transit and included in at least one of the developed concepts.

Additional discussions around budget assumptions will occur during the draft and final recommended network phases.

Implementation Date

The expected date for implementation is within the upcoming 2 to 3 years. The final schedule or possibility of a phased rollout on certain routes or cities will be determined as a part of this process.

Chico State University Routes

Routes 8 and 9, which serve the Chico State University campus, are assumed to continue operating only while the university is in session, as they do today. Their spans and frequencies are shaped by the academic calendar rather than by general travel demand.

All-Day, Two-Way Service

Both concepts assume that any route shown on the maps operates in both directions and throughout the day during its indicated span. One-way loops and mid-day service gaps, common in the current Oroville network, are eliminated in both concepts unless noted.

California’s Transit Funding Law (TDA)

California’s Transportation Development Act (TDA) is the main source of public transit funding in the state.

A portion of local sales tax is set aside for transit in each county. Agencies apply annually and must demonstrate they are running efficiently.

These funds are meant for transit first. Before a county can redirect them to road repairs, local officials must hold a public hearing and confirm that all reasonable transit needs are already being met.

Gridley, Biggs, Paradise and Magalia

Regional routes serving communities outside Chico and Oroville are outside the scope of this study. These routes are assumed to continue as offered today. Changes to local routes may affect connection points, those details will be worked out in the Draft Network Plan.

The Big Picture Matters More than Details at this Phase

These concepts have not been refined to the point that they would be ready to implement, because their purpose is to illustrate a choice at a higher altitude. A later stage of this study will use public comments about these concepts to develop a proposed draft Recommended Network, and at that point more details will need to be decided.

In general, these concepts are intended to describe the recurring patterns of service B-Line could offer. Route schedules are described not down to the minute, but in terms of what frequencies would be offered in each hour of the day, weekdays, Saturdays and Sundays.

These concepts do not show all details regarding:

- Any specialised trips (school trippers, special event routes) that might be offered on non-standard days.
- Exact start and end times for service.
- Minor deviations made by a few buses a day on a route.

All of these details will be added later in the Draft Network Plan, but doing so now would be premature when comparing these network structures at a conceptual stage.

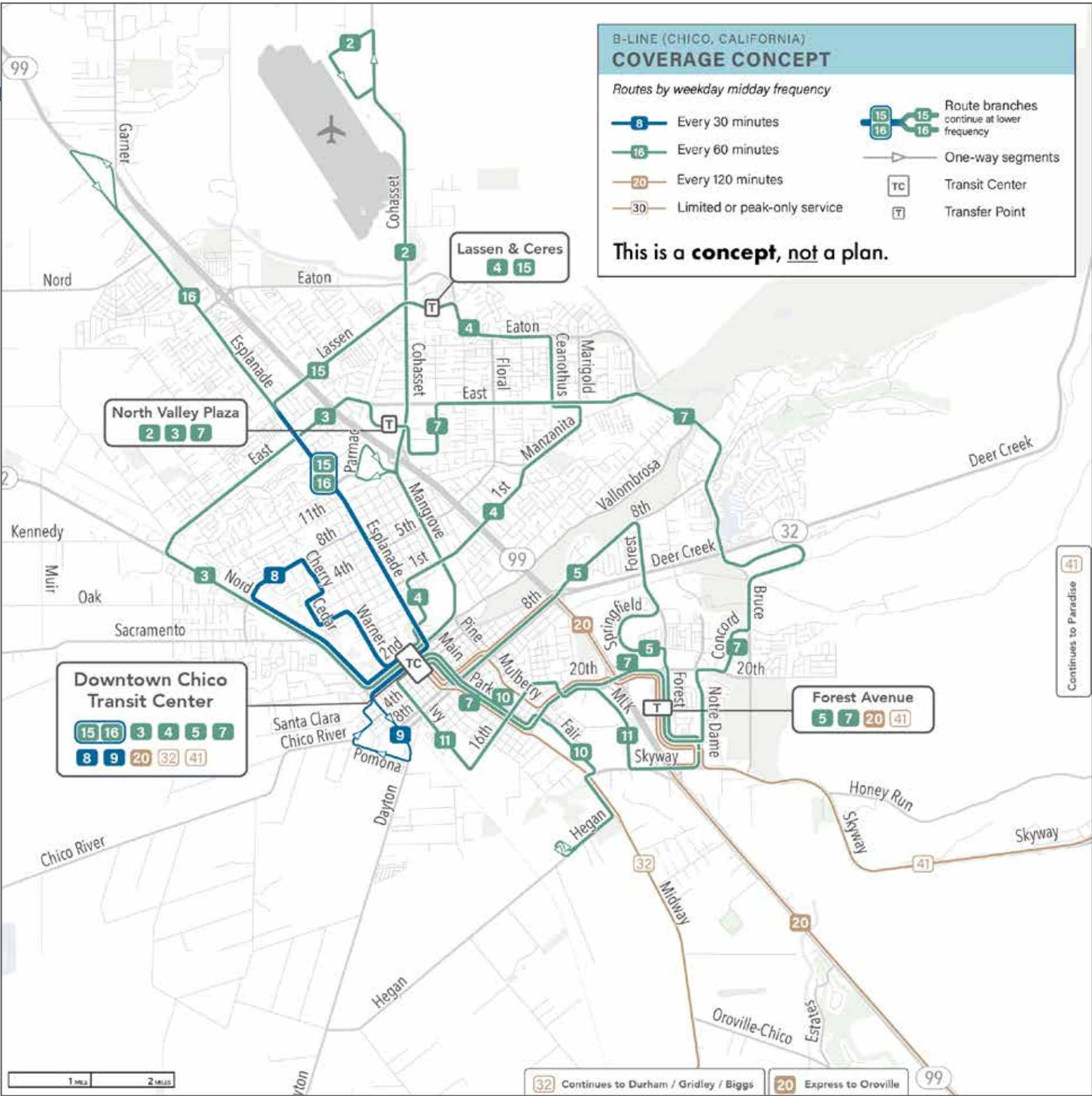
Chico Coverage Concept

In the Coverage Concept, areas currently served would still be served, and some new areas would be added to the network as well, but this means service is spread thinly.

It would not be possible to increase frequencies or spans on the highest-ridership routes as the Ridership Concept would do, and some routes would be less frequent.

Key features of this concept can be found on the next page.

Figure 44: A network map of the Coverage Concept in Chico.



Reading the maps in this report

Line color shows the frequency of bus routes at midday on weekdays:

- **Red** (not on this map) - a bus is scheduled every 15 minutes.
- **Dark Blue** - a bus is scheduled every 30 minutes.
- **Green** - a bus is scheduled every 60 minutes.
- **Tan** - a bus is scheduled every 90+ minutes, most commonly every 2 hours in the current network.

Route badges with hollow (outlined, unfilled) coloring represent peak-only express or limited-service routes. For B-Line, these are most common on the regional routes, which fall outside the scope of this study.

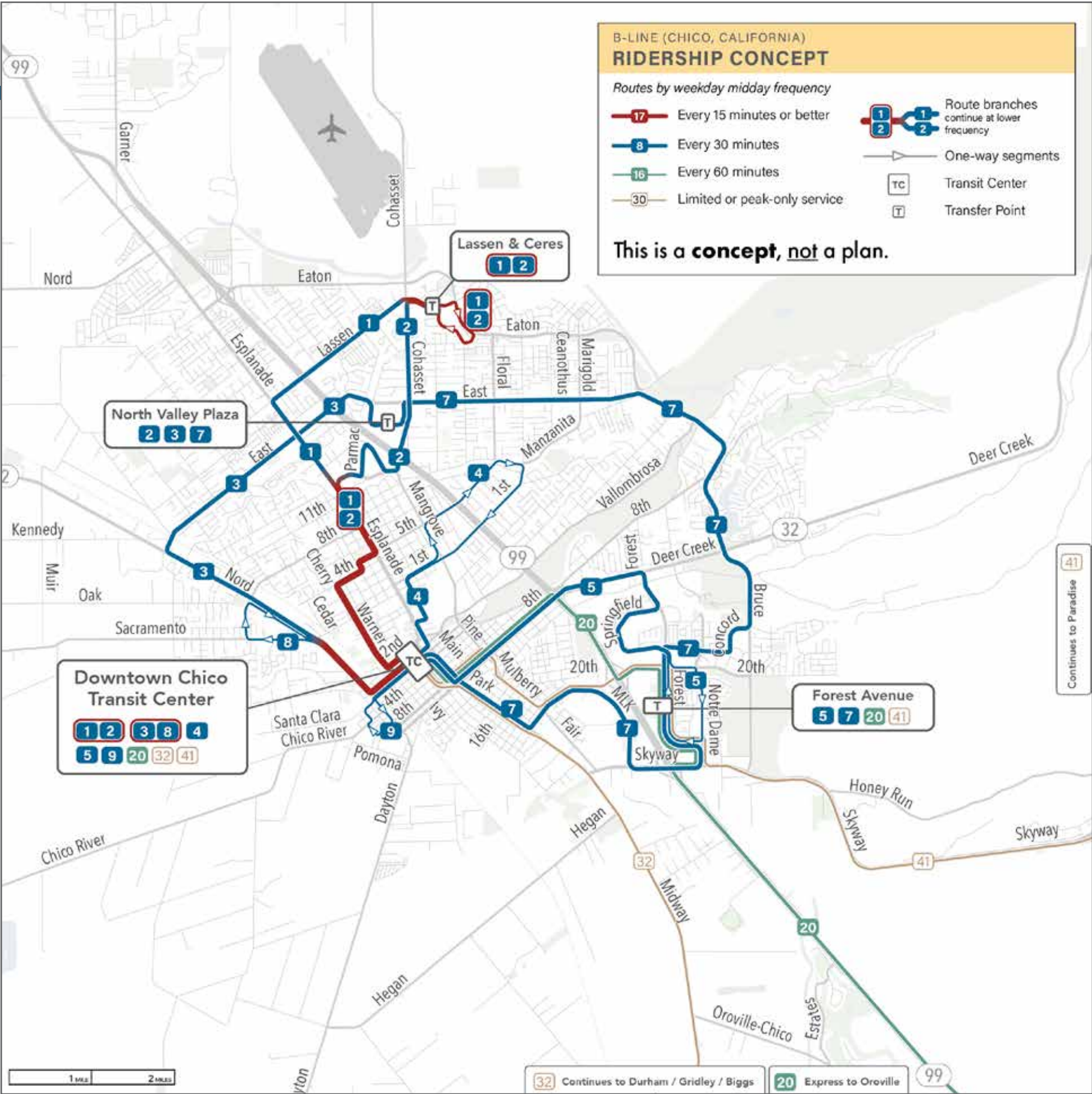
Sometimes, a route changes frequency but continues, and our maps show this with a change of color. For example, along the southern part of Esplanade, Routes 15 and 16 merge, so that these two hourly routes (green) together form a half-hourly route (blue).

Chico Ridership Concept

In the Ridership Concept, the large majority of Chico routes would run every 30 minutes, an improvement over the current standard of every 60 minutes. For people served by this network, a bus comes twice as often as today, making transit a more practical option for everyday trips.

The introduction of 15-minute frequency along the highest-demand streets means that a large number of residents and students could travel without consulting a schedule. When a bus comes every 15 minutes, you do not need to plan around it, you simply go to the stop and the next one arrives shortly.

Figure 45: A network map of the Ridership Concept in Chico.



Reading the maps in this report

Line color shows the frequency of bus routes at midday on weekdays:

- **Red** - a bus is scheduled every 15 minutes.
- **Dark Blue** - a bus is scheduled every 30 minutes.
- **Green** - a bus is scheduled every 60 minutes.
- **Tan** - a bus is scheduled every 90+ minutes, most commonly every 2 hours in the current network.

Route badges with hollow (outlined, unfilled) coloring represent peak-only express or limited-service routes. For B-Line, these are most common on the regional routes, which fall outside the scope of this study.

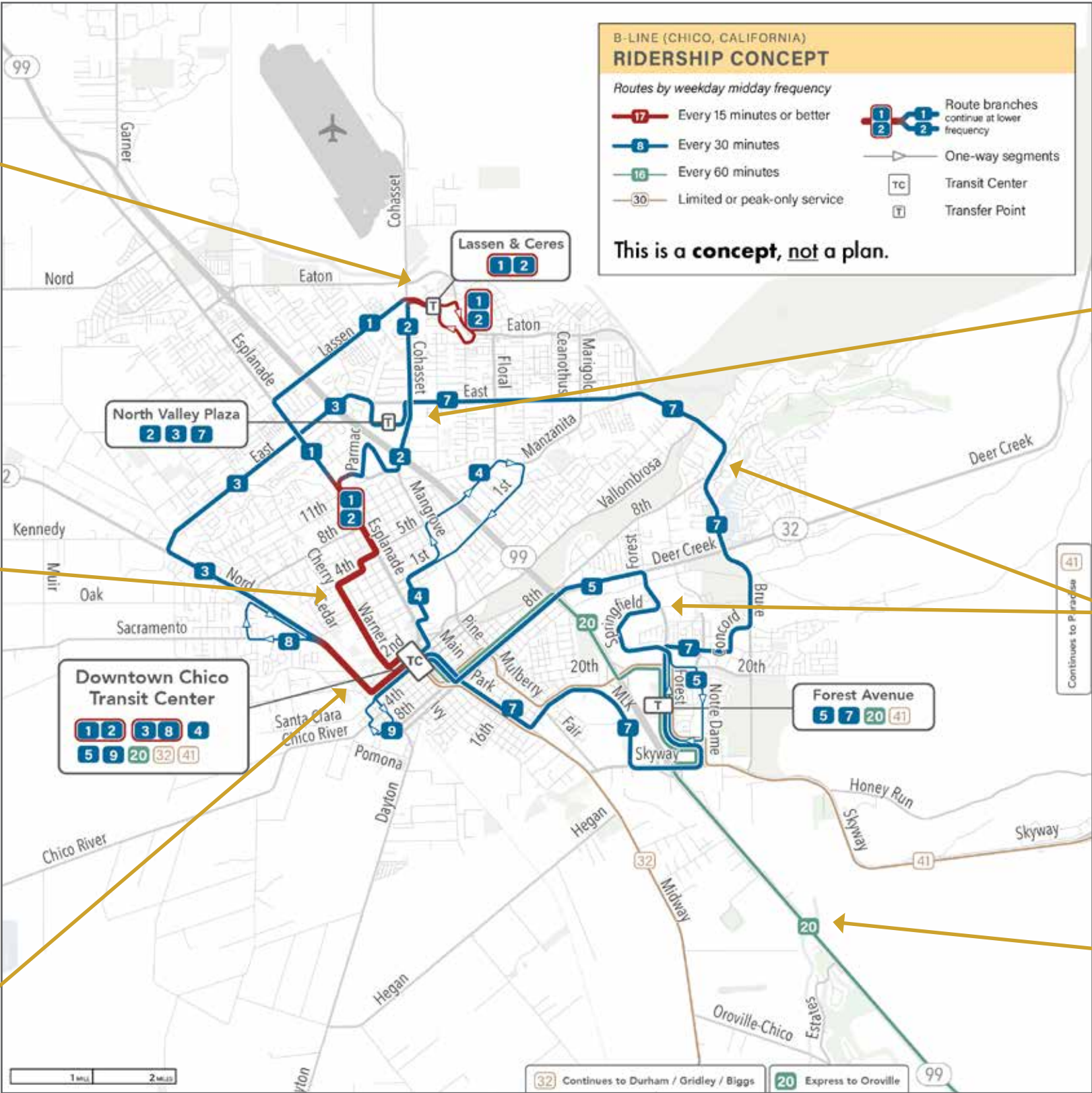
On select segments, two routes combine to create a higher “combined frequency” than either route provides alone. For example, the red line on Warner and Esplanade reflects Routes 1 and 2, whose schedules are offset along the corridor to provide 15-minute frequency on the shared segment.

Chico's Ridership Concept: Key Network Features

Routes 1 and 2 meet at Lassen in North Chico, running on offset schedules to deliver a bus every 15 minutes between North Chico and Downtown.

A new **15-minute service corridor** covers Warner through CSU and Esplanade from Enloe Hospital north to Cohasset, formed by the combination of Route 1 and Route 2.

Routes 3 and 8 combine along Nord to deliver a **bus every 15 minutes** while Chico State is in session. On weekends and over summer, Route 3 runs every 30 minutes, providing a year-round improvement over today.



Routes 3 continues as Route 7, and vice versa, to form a continuous two-way circular route, letting riders travel across Chico in either direction without the need to travel downtown.

Route 5 and Route 7 run every 30 minutes all day and on weekends, connecting Downtown Chico to the Chico Mall, big-box retail, and jobs along Skyway.

Route 20 improves to run every 60 minutes all day, including weekends, forming a more useful link between Chico and Oroville.

Oroville Coverage Concept

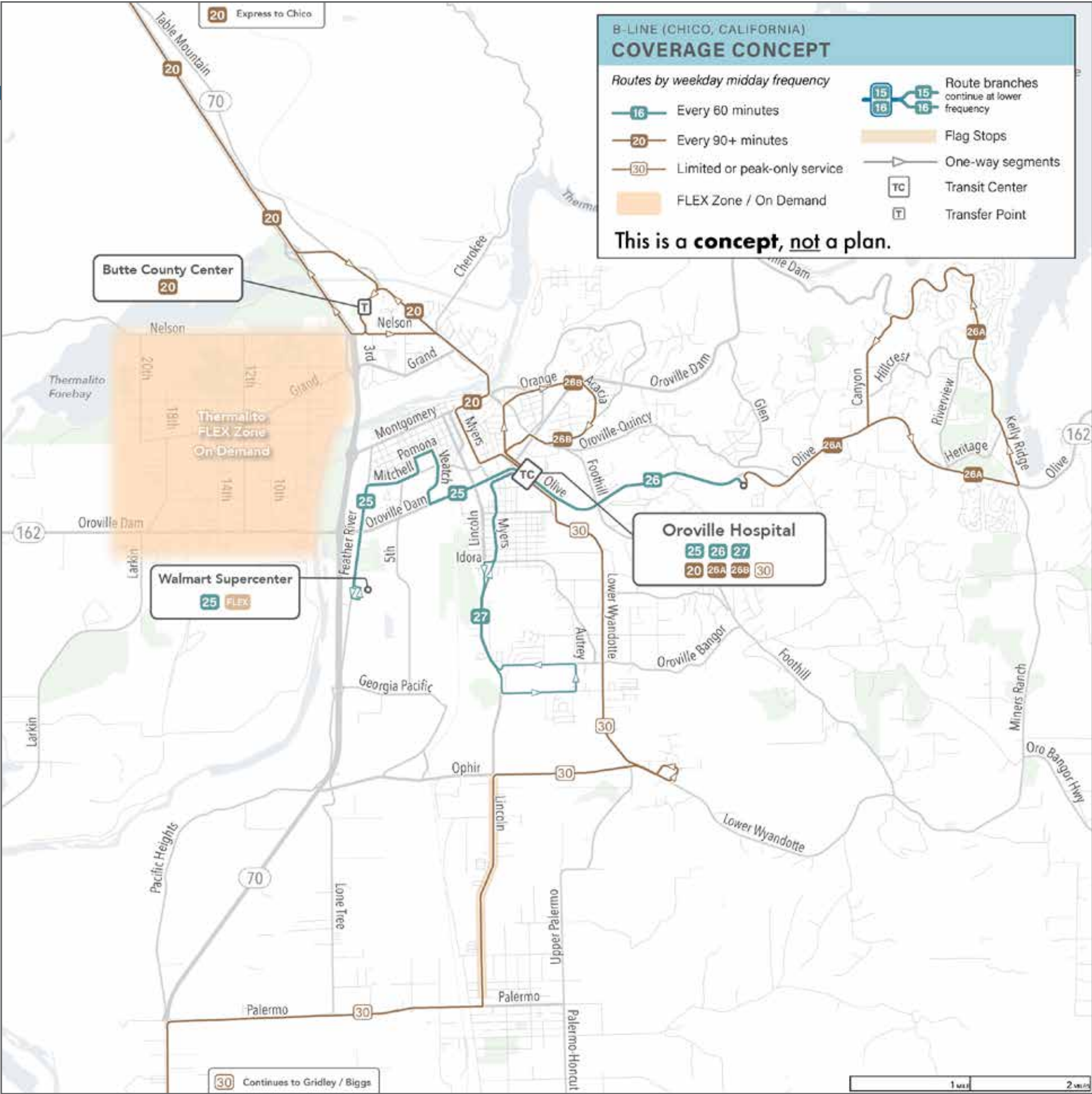
Under the Coverage Concept, all the areas currently served would continue to receive service, with additional new areas incorporated into the network. However, this results in service being distributed more thinly. Important aspects of this concept are detailed on the following page.

Additional Features on This Map

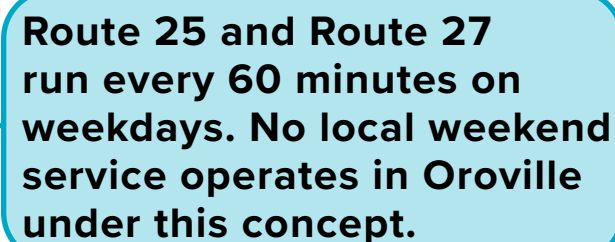
Line color shows the frequency of bus routes at midday on weekdays:

- **FLEX Zone** - A FLEX Zone is a curb-to-curb on demand service that allows riders to pre-schedule trips via an app or phone call. Once scheduled, a transit vehicle will arrive at the nearest accessible curb to pick the rider up and take them anywhere else within the zone or to select transfer locations, such as the Walmart Supercenter on Feather River Boulevard, that connect with the local Oroville bus network.
- **Flag Stops** - A flag stop is a road segment where a bus will only pull over if someone actually needs it (and waves the driver down) and there is a safe location for the driver to stop at. If no one is waiting, and no one on the bus wants to get off there, the bus keeps going until reaching standard bus stops. These can provide more opportunities for riders to board or alight the bus, but can also prove challenging for unfamiliar riders who may not understand the flag stop system or which segments of road it applies to.

Figure 46: A network map of the Coverage Concept in Oroville.



5 The Network Concepts



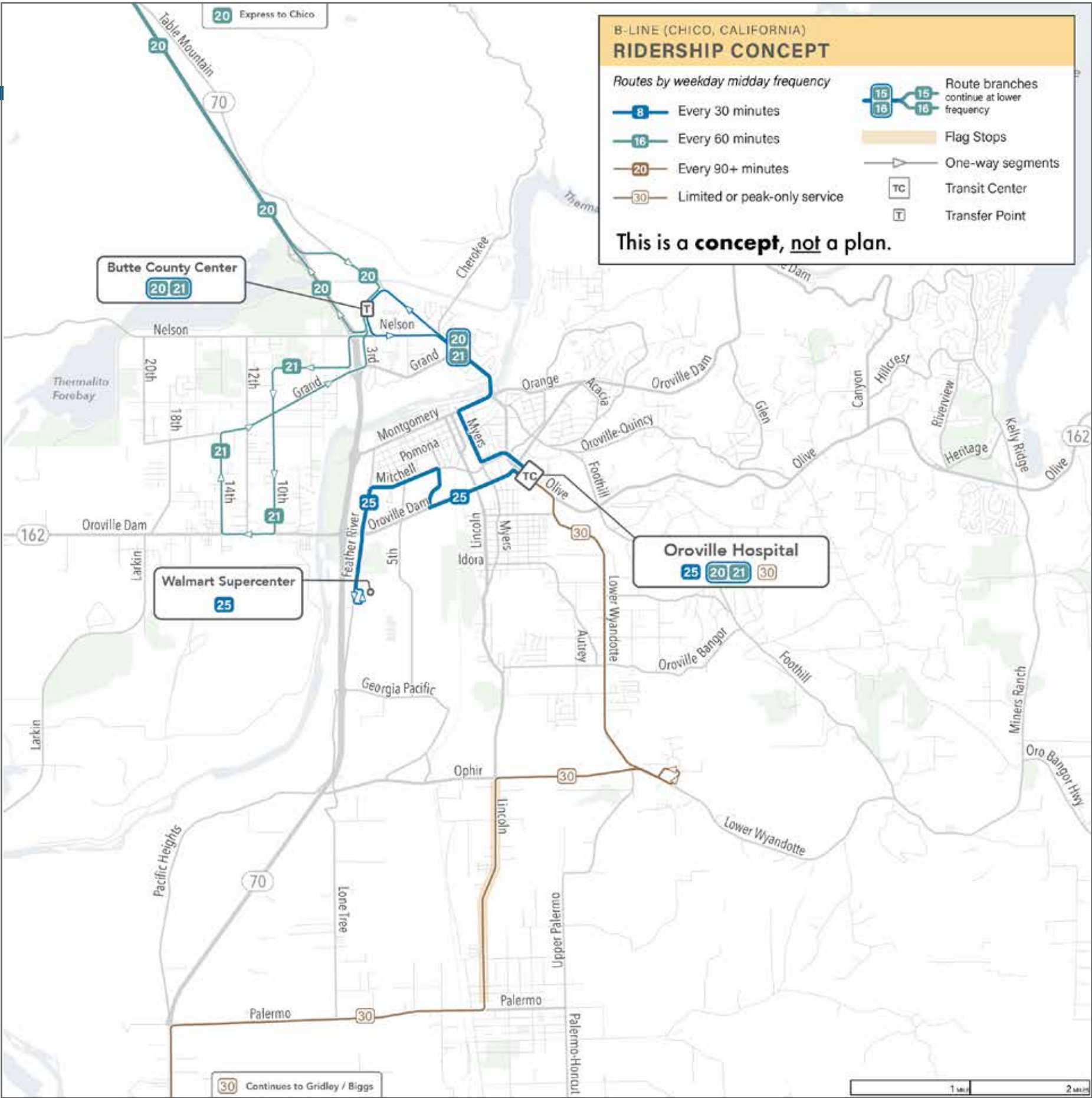
Oroville Ridership Concept

In the Ridership Concept for Oroville, many areas served by the current network would no longer be served. These resources are used to enhance those corridors with the highest ridership potential.

Higher frequency corridors provide more reliable and useful service to people and destinations most likely to use transit, including the Oroville Hospital transit center, Mitchell Street, the Walmart Supercenter, Myers Street, Table Mountain Boulevard, and the County Center.

Key features of this concept can be found on the next page.

Figure 47: A network map of the Ridership Concept in Oroville.



Reading the maps in this report

Line color shows the frequency of bus routes at midday on weekdays:

- **Red** (not on this map) - a bus is scheduled every 15 minutes.
- **Dark Blue** - a bus is scheduled every 30 minutes.
- **Green** - a bus is scheduled every 60 minutes.
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Route badges with hollow (outlined, unfilled) coloring represent peak-only express or limited-service routes. For B-Line, these are most common on the regional routes, which fall outside the scope of this study.

On select segments, two routes combine to create a higher “combined frequency” than either route provides alone. For example, the blue line on Meyers Street and Table Mountain Boulevard reflects Routes 20 and 21, whose schedules are offset along the corridor to provide 30-minute frequency on the shared segment.

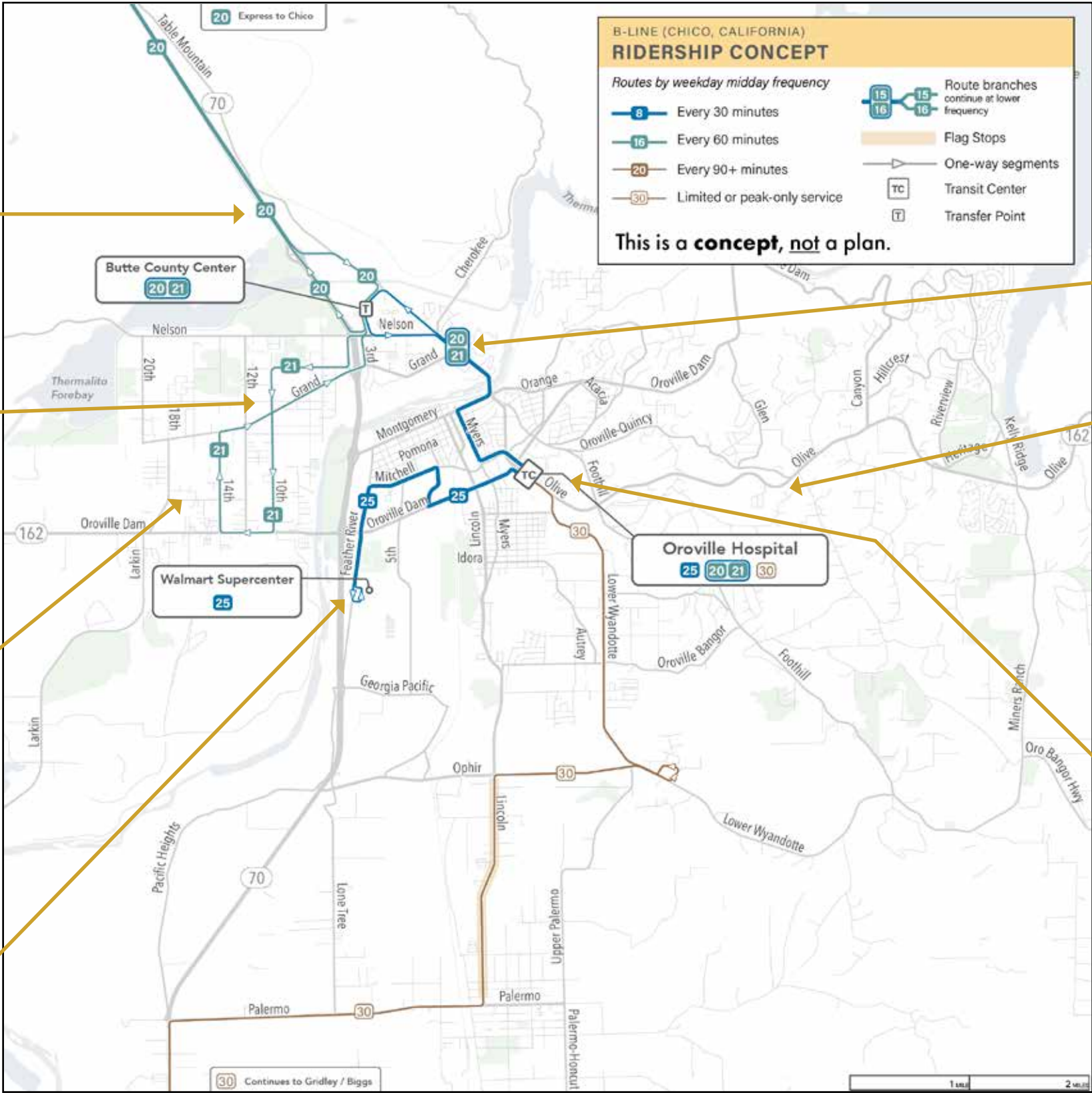
Oroville's Ridership Concept: Key Network Features

Route 20 improves to run every 60 minutes all day and on weekends, creating a more consistent, reliable all week connection between Oroville and Chico.

Route 21 extends past the County Center with a one-way loop through Thermalito connecting with County Center and Downtown Oroville without the need to transfer.

Service to the Thermalito disadvantaged community (DAC) provides direct transit access.

Route 25 runs every 30 minutes on weekdays and every 60 minutes on weekends. Creating a local seven day per week route in Oroville.



Routes 20 and 21 run on offset schedules between the County Center and Downtown Oroville, meaning a bus arrives every 30 minutes during weekdays.

Loss of service to the Berry Creek Rancheria disadvantaged community (DAC) removes direct transit access.

A new transit center at Oroville Hospital would connect Routes 20, 21, 25, and 30 giving riders direct access to the hospital, nearby shopping, and easy transfer between routes. The exact location and configuration of this transfer point is to be determined.

The Ridership Concept: Spans and Frequencies

This chart shows how the Ridership Concept would operate throughout each day of the week by hour. The Oroville Routes are located beneath the local Chico Routes (and along with Route 20) serve Oroville’s day-to-day transit users.

You can see that all routes serving Oroville would operate on weekdays between 6 a.m. and 7 p.m. This is similar to today, but with fewer total routes and the frequency of the routes in the Ridership Concept operate at 30- and 60-minute weekday frequency.

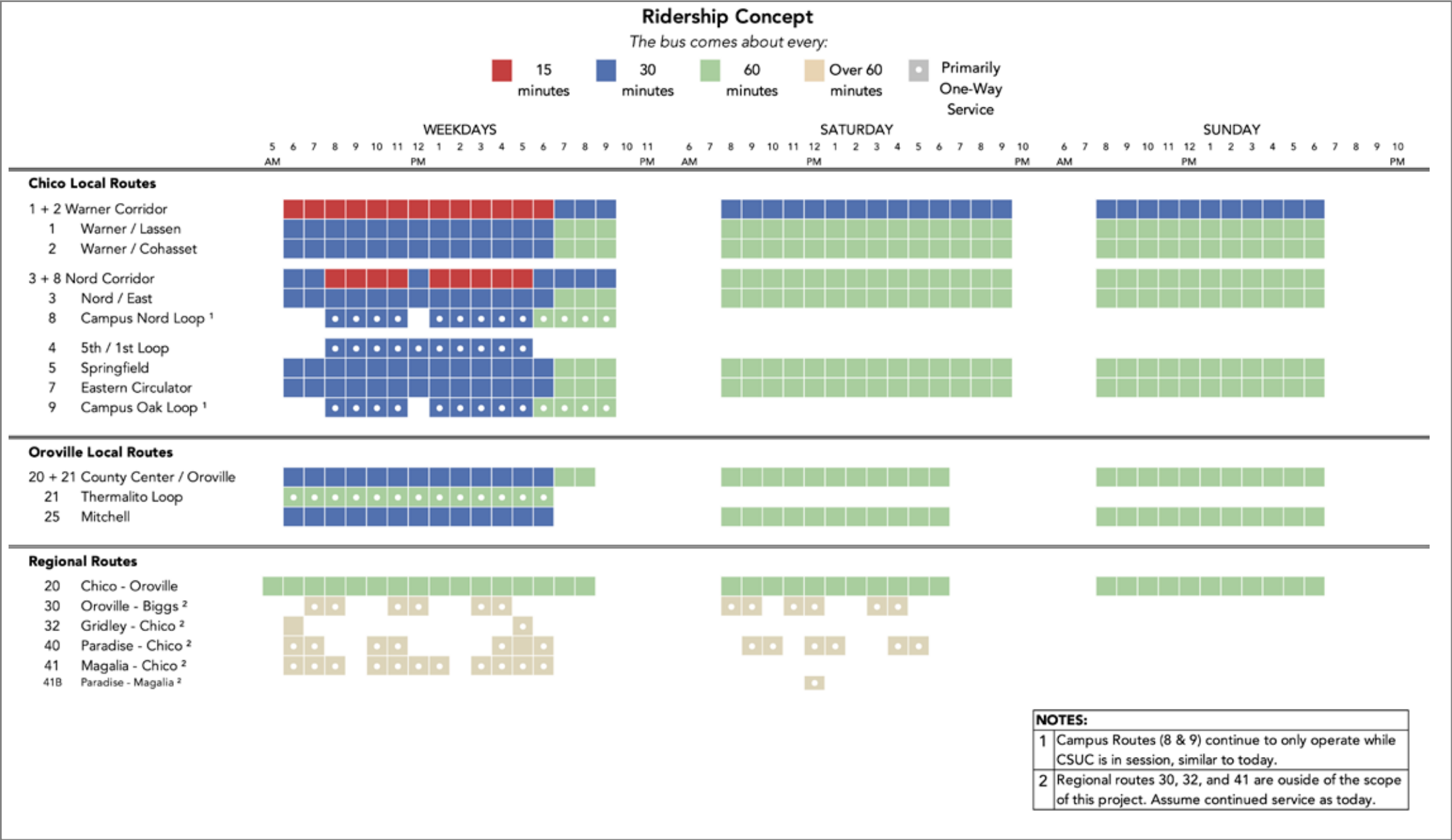
Route 20 in the Ridership Concept would improve to operate a standard 60-minute frequency connecting Chico and Oroville seven days per week with consistent hourly connections.

Within Oroville, Route 21 is designed to offset its schedule against Route 20. Between the Oroville Hospital and the County Center, that offset means a bus arrives every 30 minutes, without adding service hours.

In addition, Route 25 connecting the Walmart Supercenter on Feather River Boulevard to the central Oroville Hospital transit center via Mitchell and Oroville Dam Boulevard, currently the highest performing route in the existing Oroville system, would also increase its frequency up to every 30 minutes on weekdays.

These two strong 30-minute corridors in Oroville would have higher service levels than are currently present in the city, but at the trade-off of no longer serving some of the lower ridership areas (Kelly Ridge, Orange Avenue, and Pomona).

Figure 49: Table showing individual route frequencies and spans under the Ridership Concept





6

Outcomes: Proximity to Transit

Concept Outcomes: Proximity to Transit

What level of mobility does the B-Line network deliver to riders? This section uses two measures to quantify how useful the network is:

- **Proximity.** How many people are near transit service?
- **Access.** How many potential destinations are actually reachable using transit?

The number of people and jobs near transit (proximity) is relevant to the goal of coverage. Access to opportunity is relevant to the goal of ridership. The network with the highest actual access to opportunity will tend to have the highest ridership.

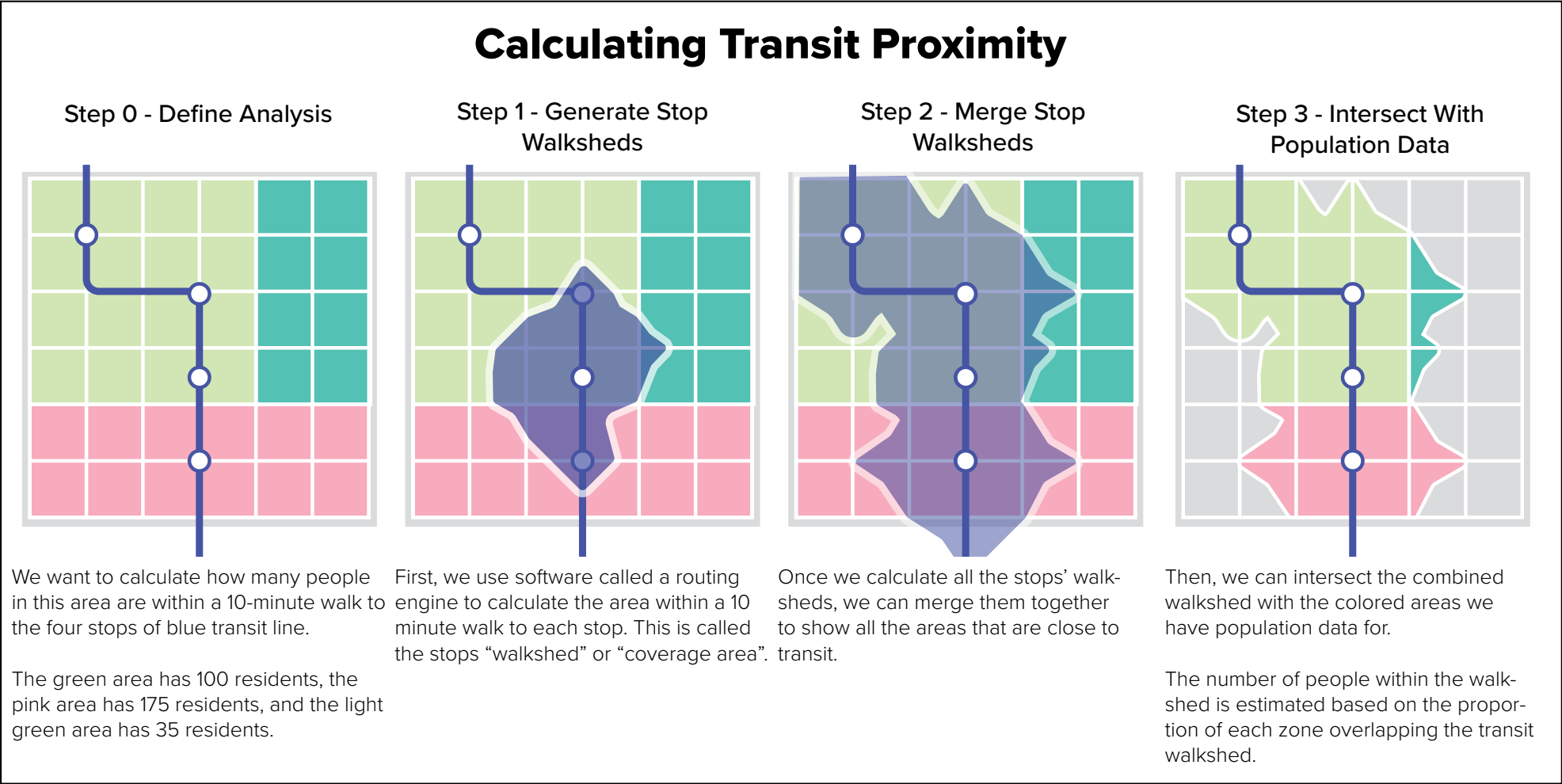
When do we measure outcomes?

Travel needs change throughout the day and week, and the role of transit shifts along with them.

Jobs and daily routines are no longer concentrated into a single morning-and-evening commute the way they once were. Retail, healthcare, hospitality, and shift work all happen outside the traditional 9-to-5.

Given this variation, this report focuses its in-depth comparison on weekday midday, the single time period that best represents typical, all-day travel across the network.

Figure 50: Methodology for calculating proximity of a transit stop.



How do we measure proximity?

To estimate how many people are located within a short walk to transit, we first use a service called Mapbox to generate the 10-minute walkshed from each B-Line stop.

A walkshed is the area reachable on foot within a given time, in this case, 10 minutes, along actual streets, not as the crow flies. A 10-minute walk covers close to half a mile for most people. For this reason, the outcome pages that follow describe this same proximity area as being within a half mile of a bus stop.

This walkshed shows us all the places that are reachable along the street network (not "as the crow flies") from each stop. We then merge all of the individual stops' walksheds together to form a complete system wide walkshed that represents all the areas that are up to a 10-minute walk from B-Line service.

In the analysis on the following pages, we report proximity in terms of the number of people near 30-minute, 60-minute, all-day and any service. To do this, we create separate combined walksheds for only the set of stops that are served at these different service levels.

Once we have created the polygons representing each service level's walkshed, we intersect them with data from the US census that tell us the number of residents and jobs in each block group. We calculate the number of people covered by each walkshed based on the percentage of the area of each block group that overlaps with the walkshed.

Proximity to Transit in Chico on Weekdays at Midday

Weekdays at Midday

Today, 17% of Chico residents have no weekday midday service. Both concepts improve on this, but pursue different goals between reach and frequency.

The **Coverage Concept** would put more residents and jobs near any service compared to the current network.

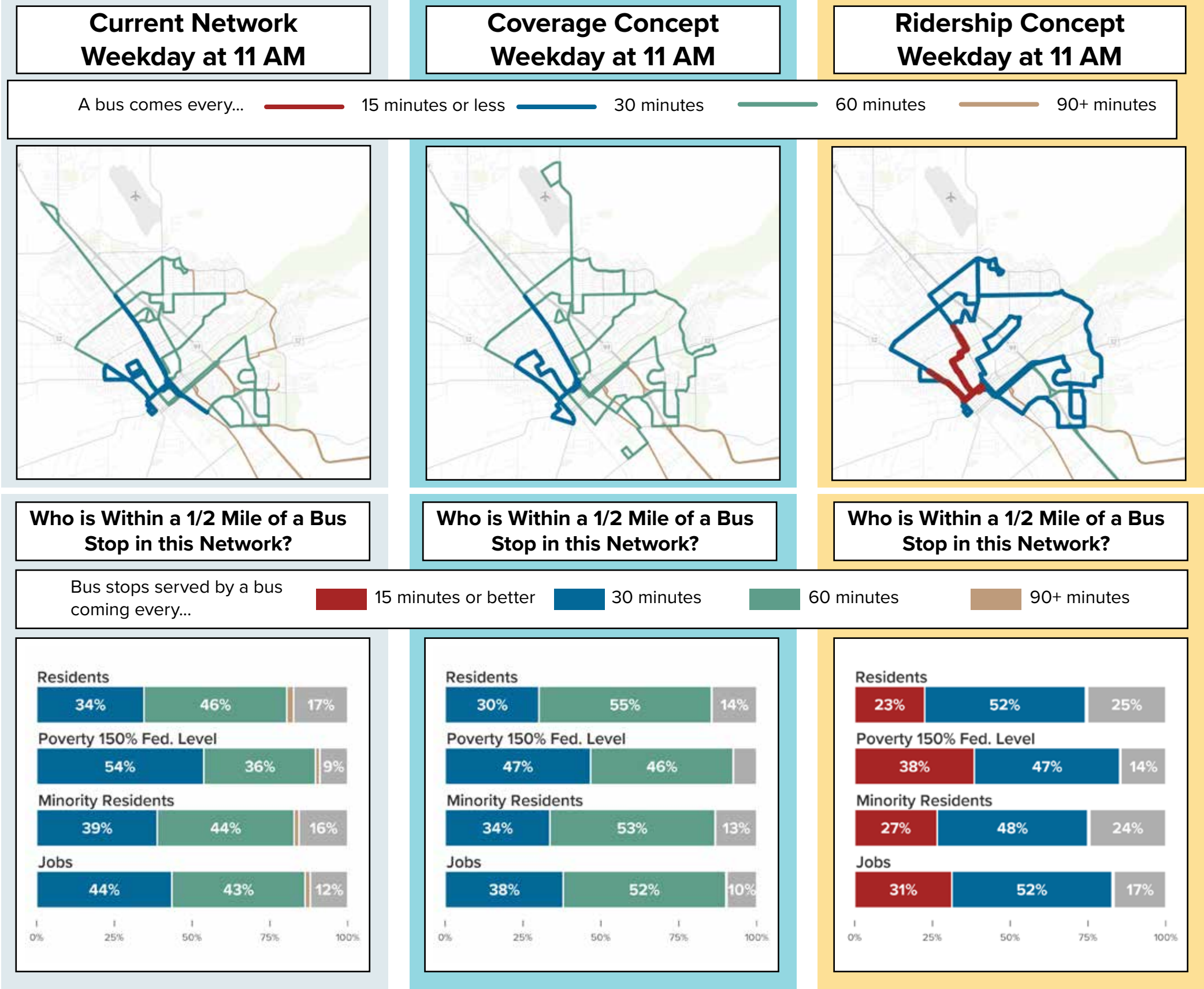
The **Ridership Concept** would concentrate service on fewer, more frequent corridors:

- 23% of all residents near 15-min and 75% near any service
- 38% of low-income residents near 15-min and 86% near any service
- 27% of residents of color near 15-min and 76% near any service
- 31% of jobs near 15-min and 83% near any service

The Ridership Concept’s frequent corridors along Nord and Esplanade would provide buses arriving every 15 minutes during weekdays.

The trade-off: Coverage reaches 86% of residents versus 75% in Ridership, but delivers no service better than 30 minutes.

Ridership gives those it reaches a bus every 15 minutes, but leaves 25% of residents without any service versus 14% in Coverage.



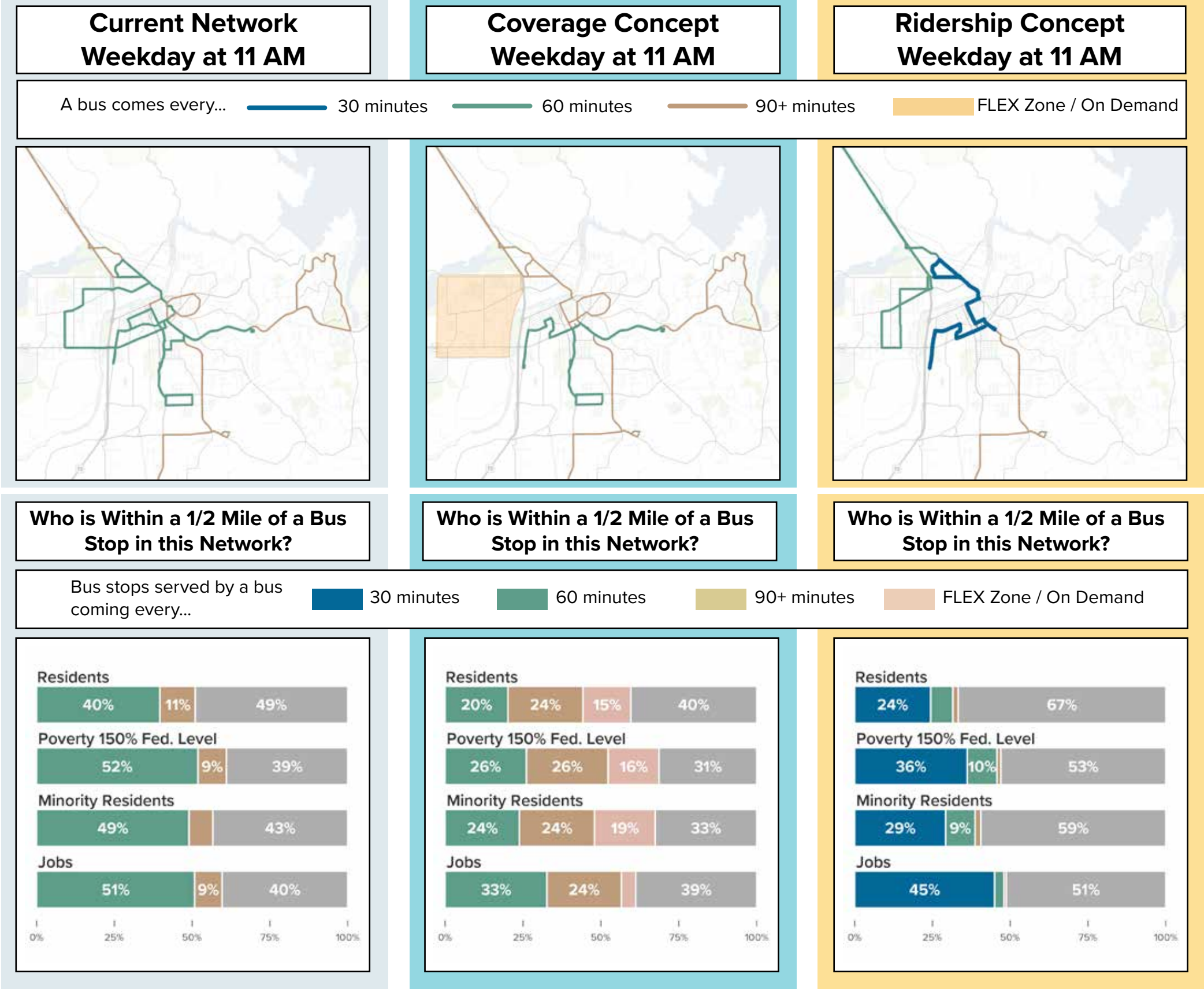
Proximity to Transit in Oroville on Weekdays at Midday

Weekdays at Midday

Today, 49% of Oroville residents have no weekday midday service. The Ridership Concept introduces new 30-minute service to Oroville for the first time, but on a significantly reduced footprint.

The trade-off: This is the sharpest coverage gap in the report. Coverage reaches 60% of residents versus only 33% in Ridership, less than today's 51%.

Oroville's lower density makes the frequency-versus-coverage trade-off harder here than anywhere else in this study. This means that for Oroville specifically, the choice between concepts involves more significant consequences than the same choice in Chico.



Proximity Outcomes Summary

The previous pages show how the two concepts compare during Weekdays during midday (11 AM). The two tables below show the outcomes across different times of day and days of the week for both Chico and Oroville.

Summary of Proximity to Transit Service in Chico				
Time Period	Metric	Today's Network	Coverage Concept	Ridership Concept
Weekday Midday (11 AM)	% residents near any service	83%	86%	75%
	% low-income residents near any service	91%	93%	86%
	% residents of color near any service	84%	87%	76%
	% jobs near any service	88%	90%	83%
Weekday Rush Hour (4 PM)	% residents near any service	83%	86%	75%
	% low-income residents near any service	91%	93%	86%
	% residents of color near any service	85%	87%	76%
	% jobs near any service	88%	90%	83%
Weekday Evening (8 PM)	% residents near any service	73%	85%	68%
	% low-income residents near any service	85%	92%	80%
	% residents of color near any service	75%	87%	69%
	% jobs near any service	82%	90%	78%
Saturday Midday (11 AM)	% residents near any service	76%	82%	68%
	% low-income residents near any service	84%	87%	80%
	% residents of color near any service	78%	83%	70%
	% jobs near any service	85%	89%	79%
Sunday Midday (11 AM)	% residents near any service	13%	82%	68%
	% low-income residents near any service	19%	87%	80%
	% residents of color near any service	14%	83%	69%
	% jobs near any service	29%	89%	78%

For more detail on comparing how each concept compares to today's network, check the appendix for individual pages exploring proximity by the days and time periods in these tables.

Summary of Proximity to Transit Service in Oroville				
Time Period	Metric	Today's Network	Coverage Concept	Ridership Concept
Weekday Midday (11 AM)	% residents near any service	51%	60%	33%
	% low-income residents near any service	61%	69%	47%
	% residents of color near any service	57%	67%	41%
	% jobs near any service	60%	61%	49%
Weekday Rush Hour (4 PM)	% residents near any service	51%	60%	34%
	% low-income residents near any service	61%	69%	48%
	% residents of color near any service	57%	67%	42%
	% jobs near any service	60%	61%	49%
Weekday Evening (8 PM)	% residents near any service	0%	0%	18%
	% low-income residents near any service	0%	0%	25%
	% residents of color near any service	0%	0%	21%
	% jobs near any service	0%	0%	34%
Saturday Midday (11 AM)	% residents near any service	25%	26%	26%
	% low-income residents near any service	37%	37%	37%
	% residents of color near any service	30%	30%	31%
	% jobs near any service	44%	45%	46%
Sunday Midday (11 AM)	% residents near any service	22%	24%	24%
	% low-income residents near any service	34%	35%	36%
	% residents of color near any service	27%	29%	29%
	% jobs near any service	40%	43%	45%



7

Outcomes: Access to Opportunity

Access to Opportunity: How We Measure It and Why We Measure It

How do we measure access?

People ride transit when they find it useful. One of the clearest ways to show how useful a transit network is (or could be) is to map where a person could reach on public transit from a given starting point in a set amount of time.

The maps on the following pages show how far someone can travel from different locations in Chico and Oroville in 45 minutes at weekday midday, using each concept network compared to the existing network.

This type of map is called an isochrone. A more useful transit network produces a larger isochrone, because frequent, well-connected service lets people reach more destinations in the same amount of time.

Think of these diagrams as showing **“the wall around your life”**. If you are at the designated location, the diagrams show where you could get to in a time you are likely to have in your day. These diagrams also capture the likelihood that when you look up a trip you are thinking of making, you will find that the travel time is reasonable. That’s why higher access tends to lead to higher ridership.

Why weekdays at noon?

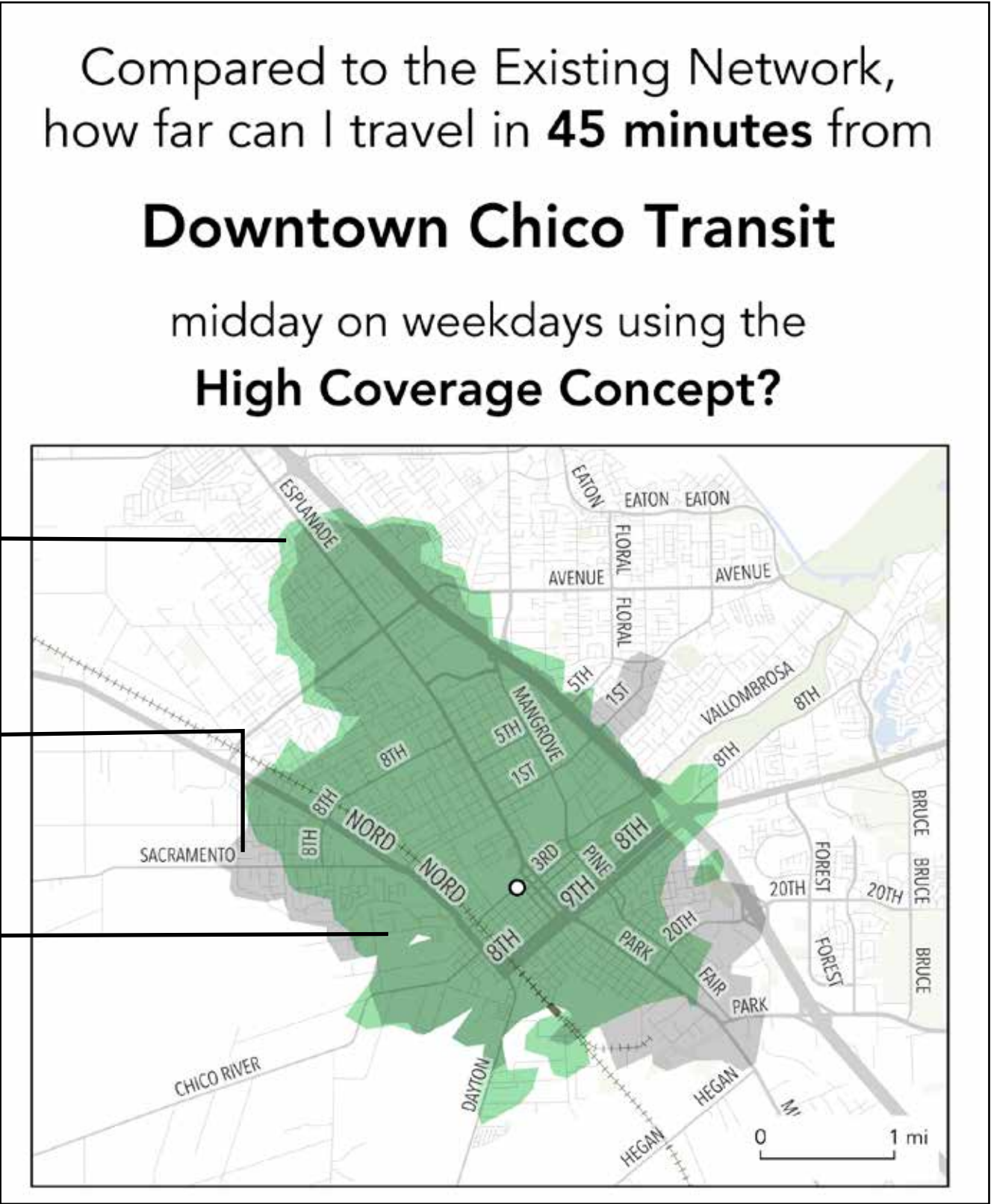
This analysis uses midday service because it reflects what riders can rely on for most of the day. Rush-hour service can be more frequent, but many people travel for medical appointments, errands, school pickups, and shift work outside peak hours. Midday frequency is the baseline that shapes whether transit is useful for daily life.

Figure 51: This graphic helps show how to read an isochrone of travel by transit from the Downtown Chico Transit Center. It compares today’s network with the Coverage Concept. The following pages will show both conceptual networks side by side.

Light Green areas are newly reachable in 45 minutes of travel in the Coverage Concept.

Gray areas are reachable in 45 minutes of travel today, but not the Coverage Concept.

Dark green areas are reachable in 45 minutes of travel today and in the Coverage Concept.



Concept Comparison Isochrones

The previous page shows access from the Downtown Chico Transit Center, the most connected point in the Chico network.

The maps on this page show where someone can reach in 45 minutes from both Downtown Chico Transit Center and Oroville Hospital under the Coverage and Ridership Concepts. See previous page for the meanings of the colors.

Figure 52: Comparison travel time isochrones from the Downtown Chico Transit Center

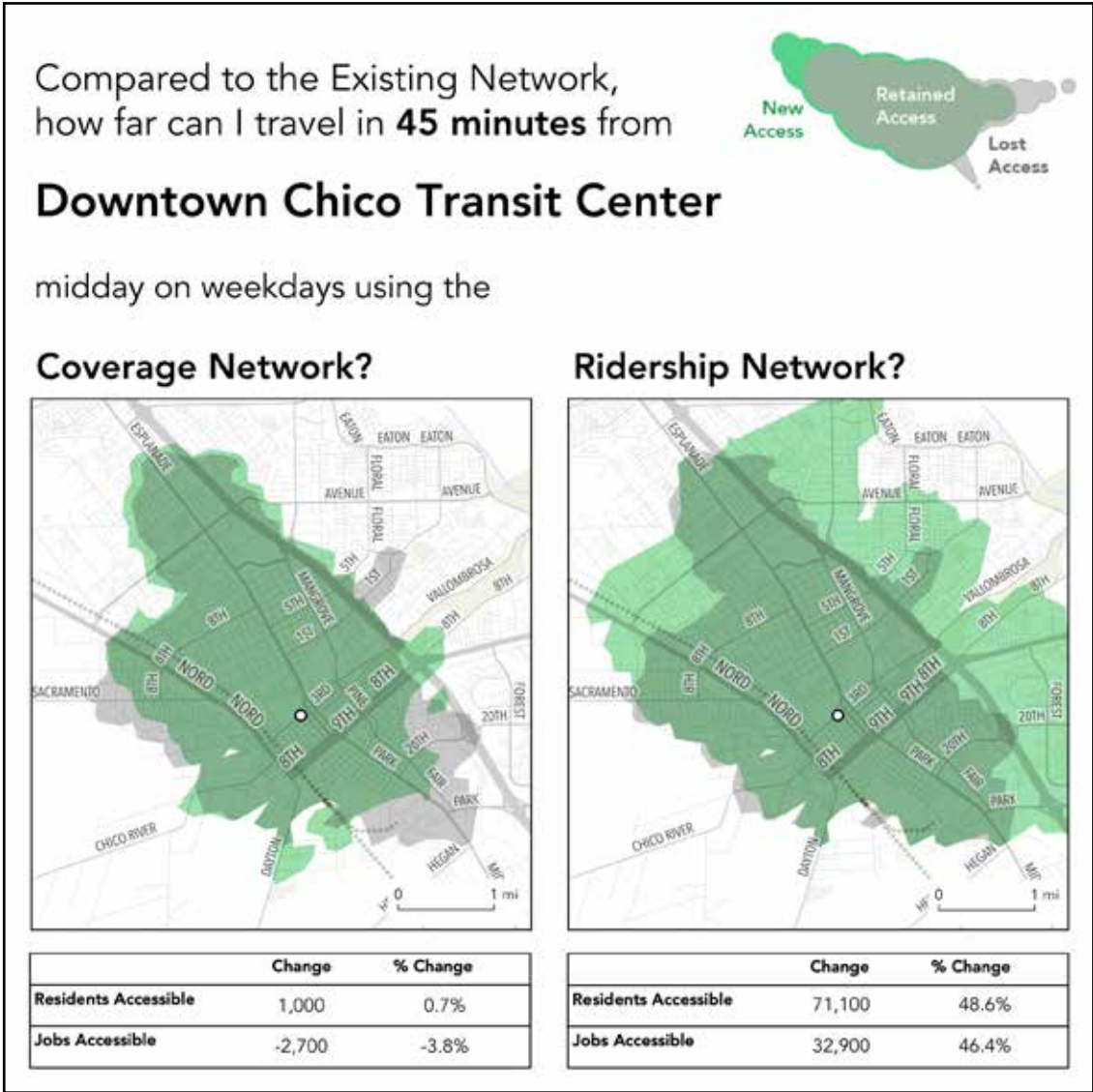
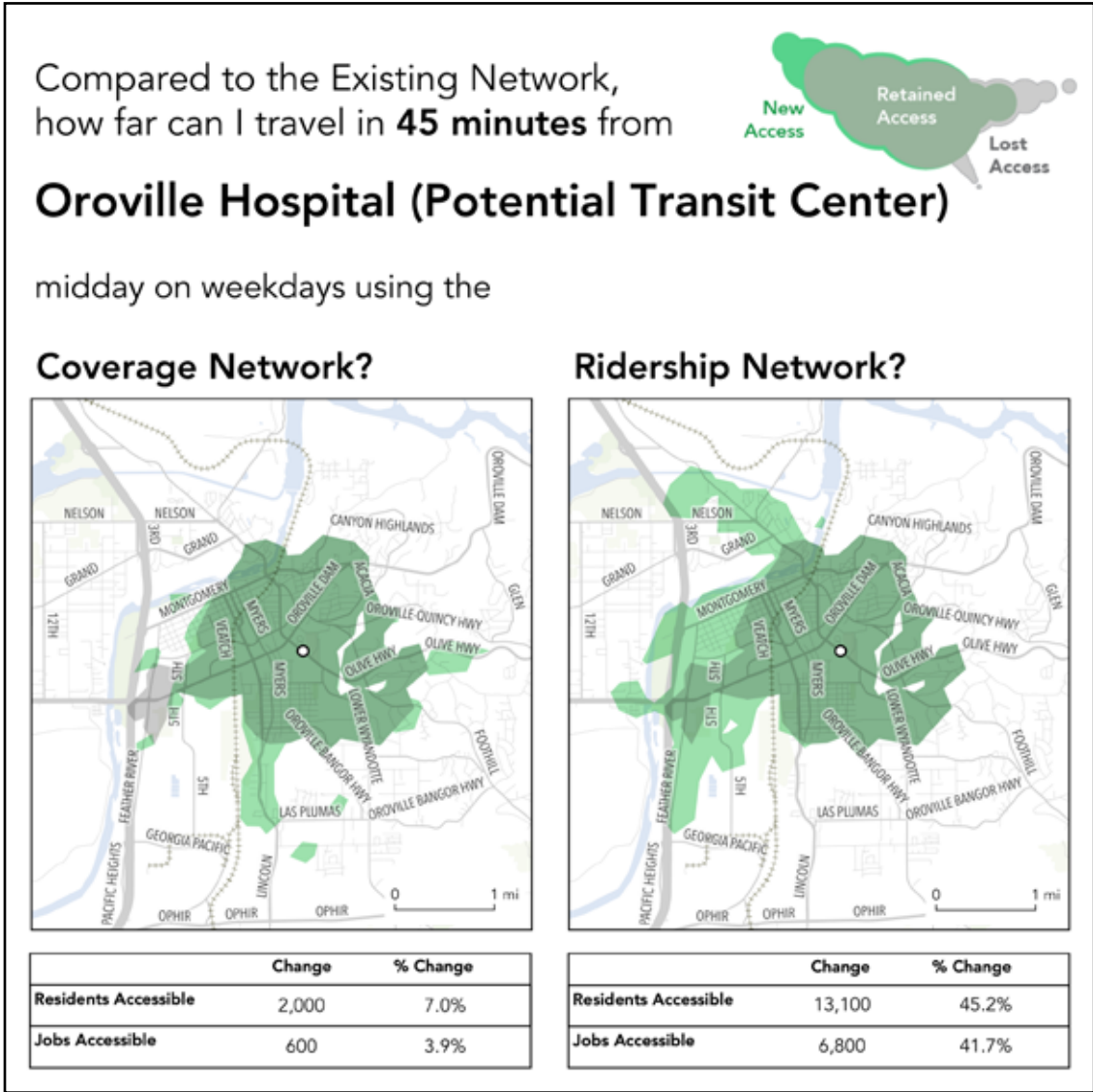


Figure 53: Comparison travel time isochrones from Oroville Hospital



Concept Comparison Isochrones

The maps at right expand the isochrone analysis beyond the two transit centers. Six origins were chosen to represent different parts of the network and different types of neighborhoods, from the dense student corridor near Chico State to lower-density residential areas in Thermalito.

Taken together they help show how access changes across the full network, not just from its strongest points.

- University Village shows where a student living near campus could travel under each concept.
- E 3rd Avenue and Esplanade represents the dense core of Chico's transit demand.
- Butte College Chico Center represents the southeast Chico corridor, anchored by the Chico Marketplace and big-box retail along Skyway.
- Oroville High School shows where students and nearby residents could travel within Oroville.
- Grand Avenue and 14th Street shows how service changes for residents of Thermalito, west of downtown Oroville.
- County Center Drive and Court Street represents one of the highest concentrations of jobs and multifamily housing in Oroville.

Figure 54: A series of six travel time isochrone comparison from locations across Chico and Oroville can help to highlight how individual trips would be change under each concept



Citywide Access to Opportunities

How Citywide Access was Calculated

The isochrone maps on the previous pages show how far someone can travel from a specific starting point in a given amount of time. We then calculate the number of jobs in that area to determine access to opportunity.

This page shows how we combine those results for every point in the city to show how an alternative changes access to opportunity citywide.

The analysis calculated the area reachable in 45 or 60 minutes from each of hundreds of locations, including one near every resident.

Each location was weighted by the number of residents living nearby, so that gains in dense neighborhoods count for more than gains in areas where few people live. The goal is to measure transit usefulness for the most people, not the most geographic area.

The detail for each location is useful, but we can also summarize the result in a single number: **how many jobs can the average resident reach by transit in a given amount of time.**

The maps on the following pages show the detail, followed by the totals.

Each dot on these maps represents 10 residents. Where dots are closer together that residential density is higher. Dot color shows whether residents in a given area would gain or lose job access compared to today.

- **Green** shows residents whose job access would increase, at midday on weekdays, compared to the Existing Network.
- **Light Gray** shows residents whose job access would change little or none.
- **Brown** shows residents whose job access would decrease.

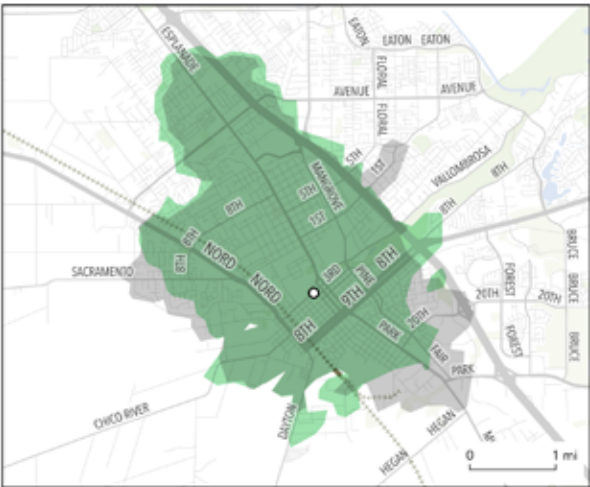
STEP 1:

Count the jobs that can be reached from a specific location, in a certain amount of time, using transit. In this example, from the Chico Transit Center in Chico.

Compared to the Existing Network, how far can I travel in **45 minutes** from

Downtown Chico Transit

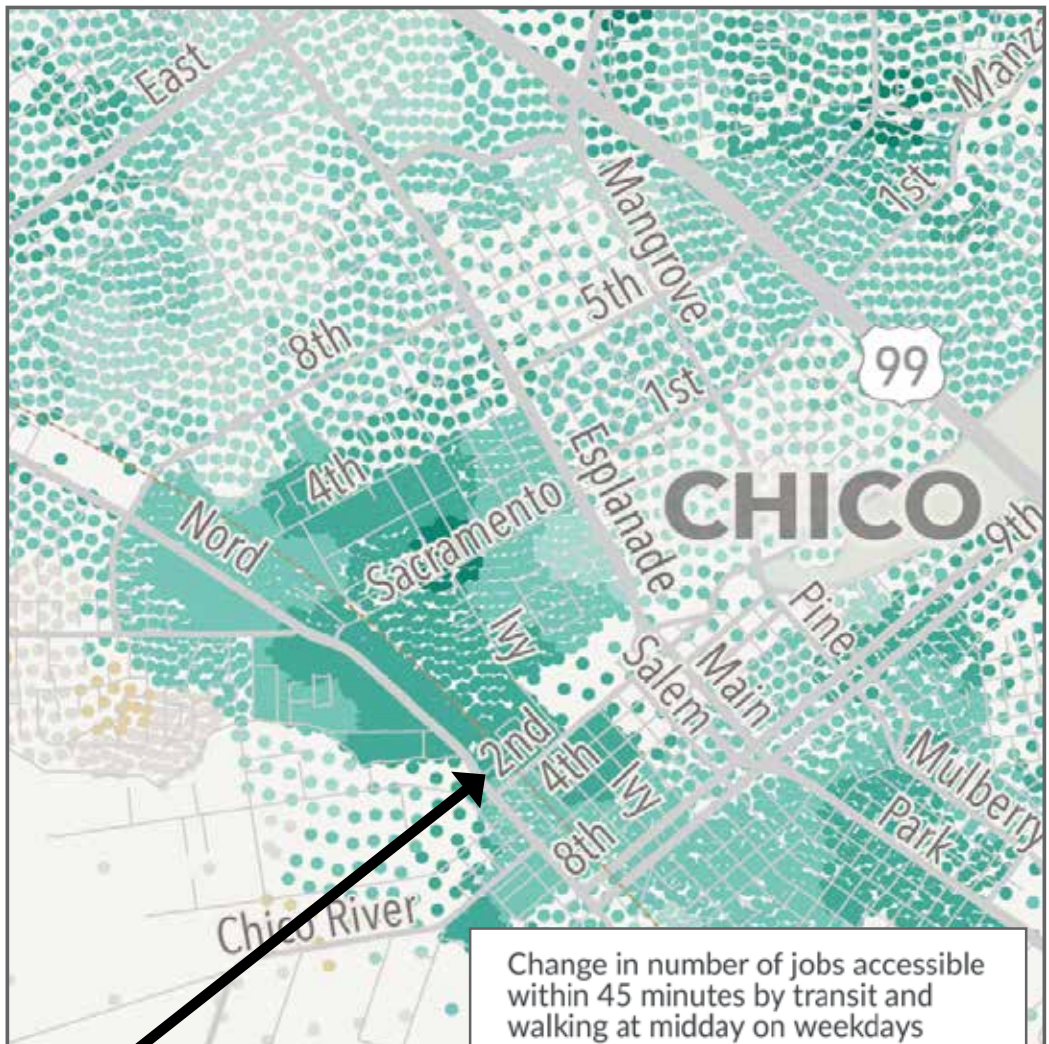
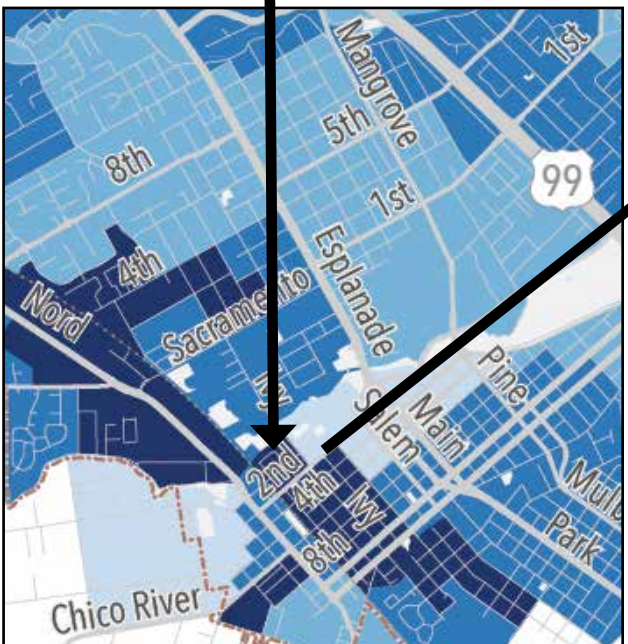
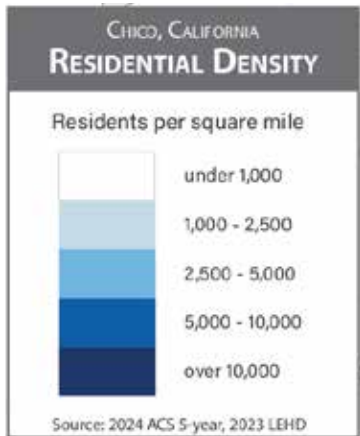
midday on weekdays using the **High Coverage Concept?**



	Total Change	% Change
Residents Accessible	1,000	0.7%
Jobs Accessible	-2,700	-3.8%

STEP 2:

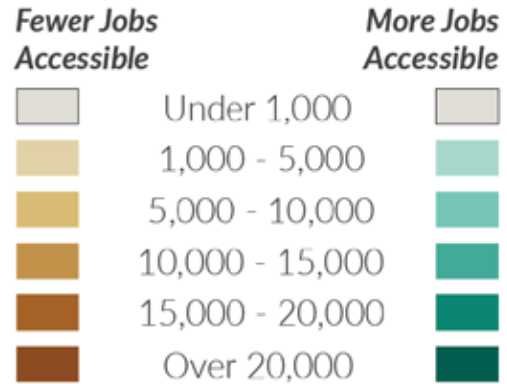
Multiply by the number of residents in that location.



STEP 3:

Repeat for every location in the city. This results in a map showing how many jobs can be reached (by color) and how many residents are in that location (density of dots).

Change in number of jobs accessible within 45 minutes by transit and walking at midday on weekdays



One dot = 10 residents

Data: LEHD 2023, ACS 2024

Coverage Concept Access Change in Chico

Access Change by Area in Chico

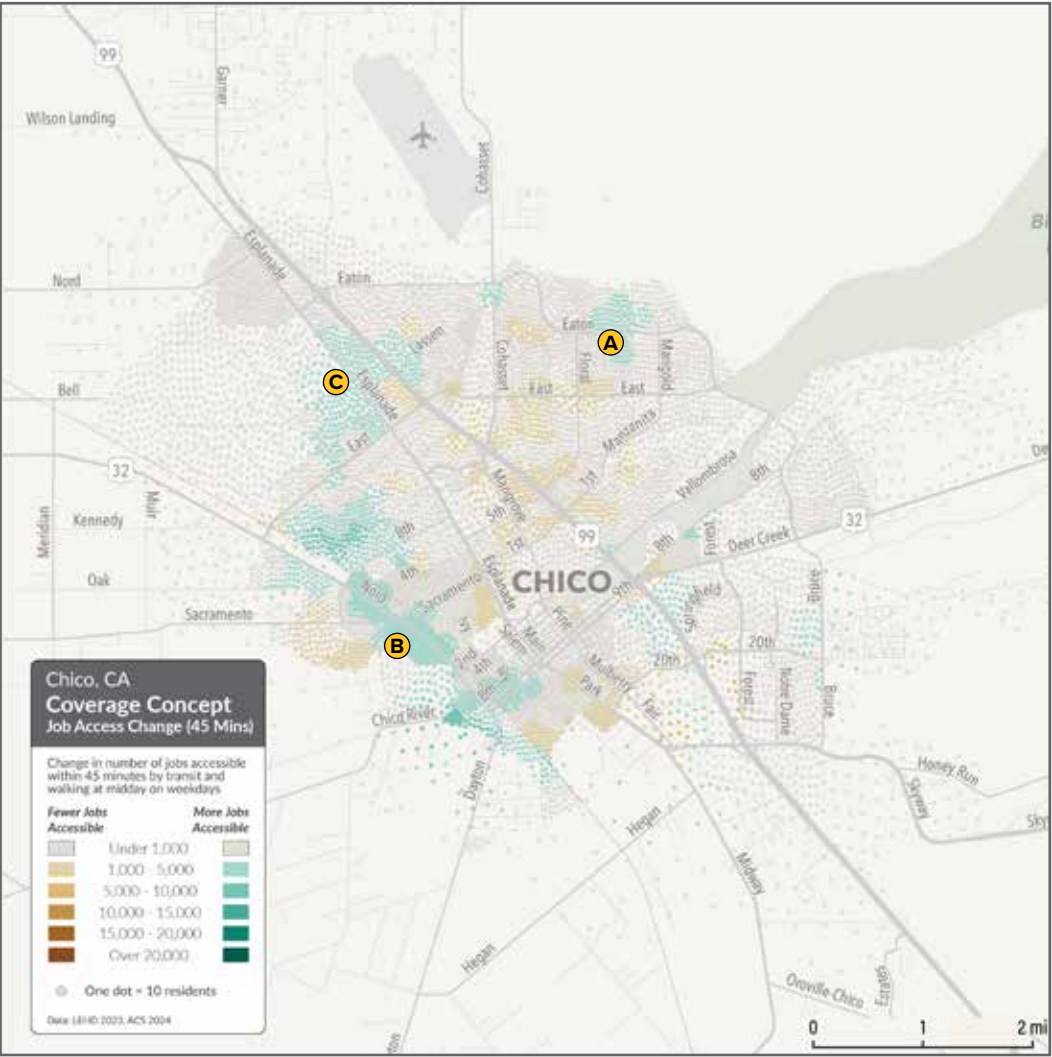
The Coverage Concept produces a network that closely resembles today’s B-Line service in Chico, but with some added coverage to new areas and some improvements in the design. Because service is spread over such a large area, frequencies are poor, mostly every 60 minutes. Because of that frequency, a bus route alone does not open up enough extra travel time to reach many additional jobs within 45 minutes. Most of the access gains only show up with a 60-minute travel time.

The main areas that gain access are around Chico State **B**, where the new two-way Route 8 loop links downtown with university housing along Nord in both directions. Areas along Esplanade north of East Avenue **C** also benefit because removing Route 16’s Cohasset deviation makes the route more direct and reliable.

At 60 minutes of travel, more areas show improvement. Newer developments along East Eaton Street **A** and projects south of downtown **D** become more accessible, as does southeast Chico along Bruce Road **E**, where Route 7 provides a new orbital connection that lets riders cross the city without going through downtown.

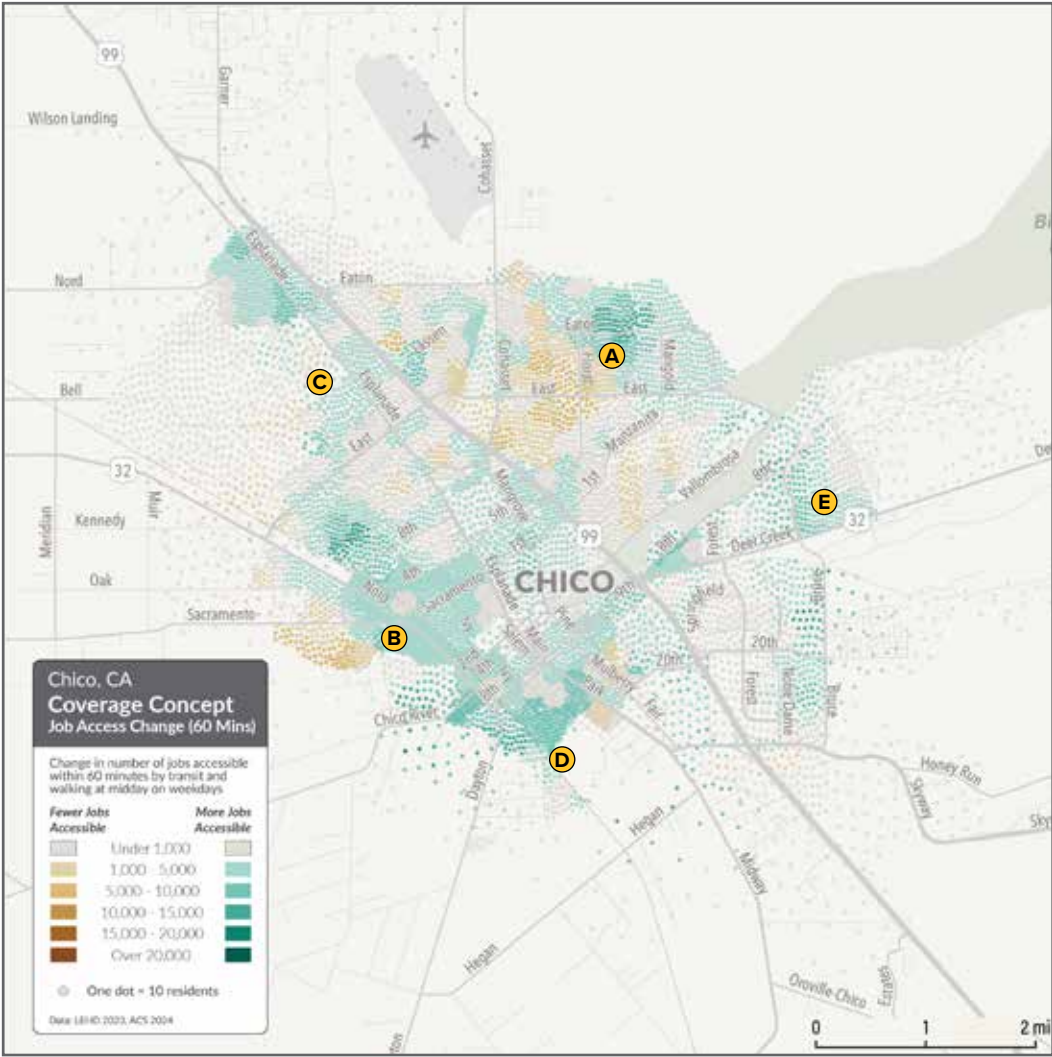
The result: the average Chico resident can reach 3% more jobs within 45 minutes and 11% more jobs within 60 minutes under the Coverage Concept compared to today’s network.

Figure 55: Chico’s Coverage Concept, 45-min access change



**The average Chico resident can reach
300 more jobs (+3%)
within 45 minutes under the
Coverage Concept
compared to today.**

Figure 56: Chico’s Coverage Concept, 60-min access change



**The average Chico resident can reach
1,950 more jobs (+11%)
within 60 minutes under the
Coverage Concept
compared to today.**

Ridership Concept Access Change in Chico

Access Change by Area in Chico

The Ridership Concept produces much larger access gains than the Coverage Concept, and those gains show up sooner. Because most routes run every 30 minutes and the core corridors run every 15 minutes, shorter waits mean more destinations become reachable within 45 minutes of travel, not just 60.

The largest gains are along Nord, Warner, and Esplanade **A**, where 15-minute service connects Chico State, the downtown core, and the inner neighborhoods directly and frequently. The area around Lassen and Cohasset **B** also sees large gains from Routes 1 and 2 combining to deliver a bus every 15 minutes toward downtown.

Areas that see initial gains at 45 minutes and larger gains at 60 minutes include outer east Chico along the new Route 7 **D** which connects Bruce Road, Skyway, and East Avenue together for the first time.

The primary area of reduced access is north Esplanade **C**, where the Ridership Concept eliminates Route 16 to redirect those resources toward higher-frequency service on the core corridors. Residents there lose access so that residents near the busiest corridors gain a substantially more useful service.

The result: under the Ridership Concept, the average Chico resident can reach 10,050 more jobs (+58%) within 60 minutes and 7,350 more jobs (+84%) within 45 minutes, compared to today's network. While the percentage increase is larger at 45 minutes, the actual number of additional jobs gained is greater at 60 minutes.

Figure 57: Chico's Ridership Concept, 45-min access change

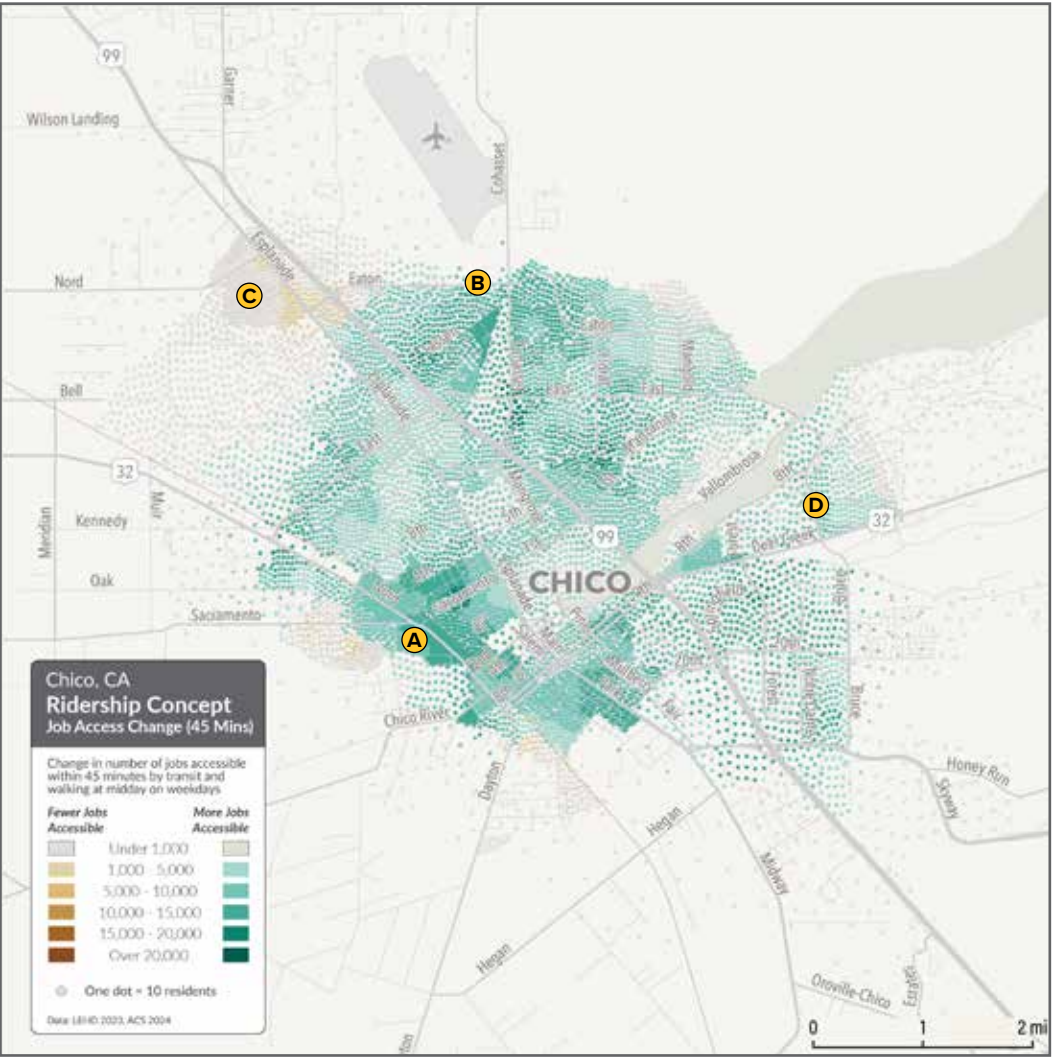
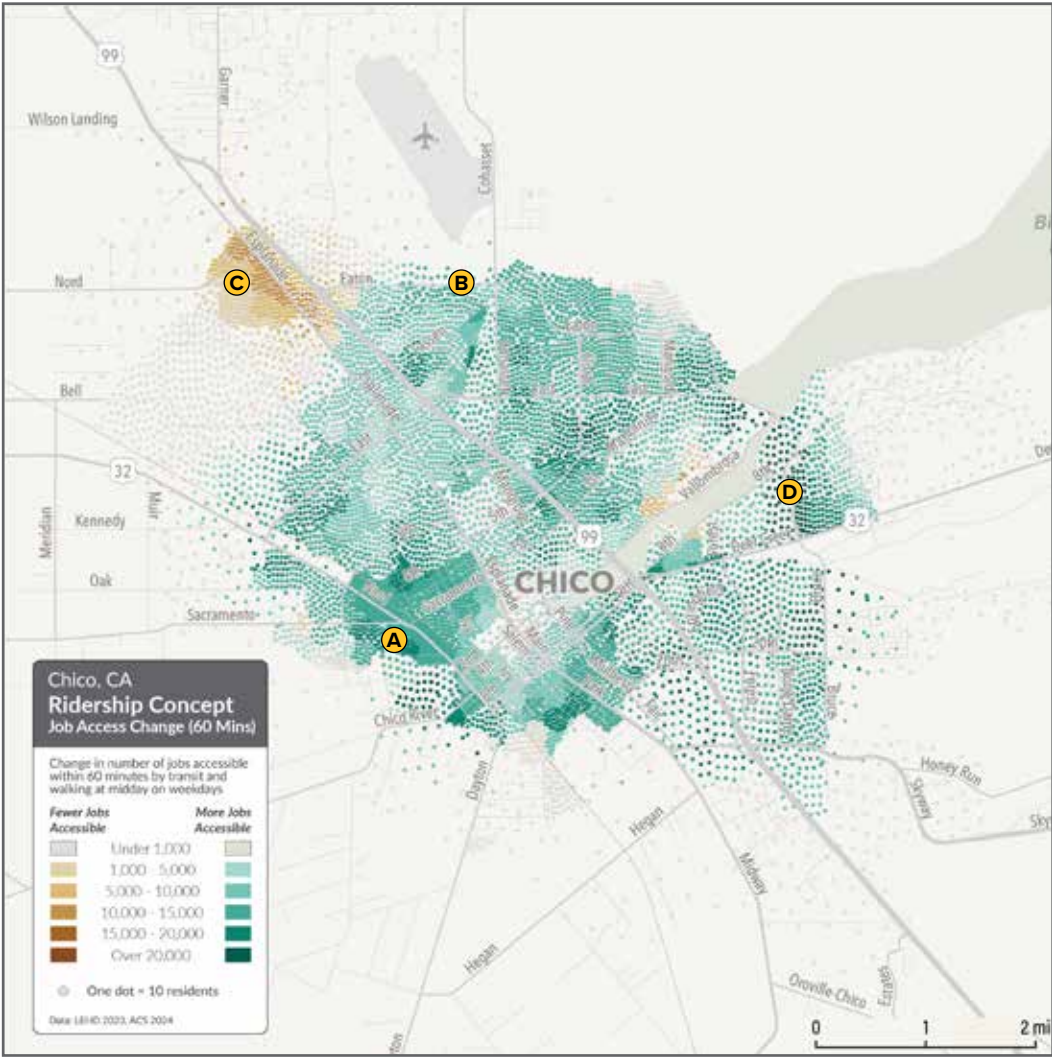


Figure 58: Chico's Ridership Concept, 60-min access change



**The average Chico resident can reach
7,350 more jobs (+84%)
within 45 minutes under the
Ridership Concept
compared to today.**

**The average Chico resident can reach
10,050 more jobs (+58%)
within 60 minutes under the
Ridership Concept
compared to today.**

Coverage Concept Access Change in Oroville

Access Change by Area in Oroville

The Coverage Concept in Oroville produces a network very similar to what exists today. Most routes continue on similar alignments, so access gains are modest and concentrated at the 60-minute travel time threshold, reflecting the 60-minute frequency that most Oroville routes operate at today and would continue under this concept.

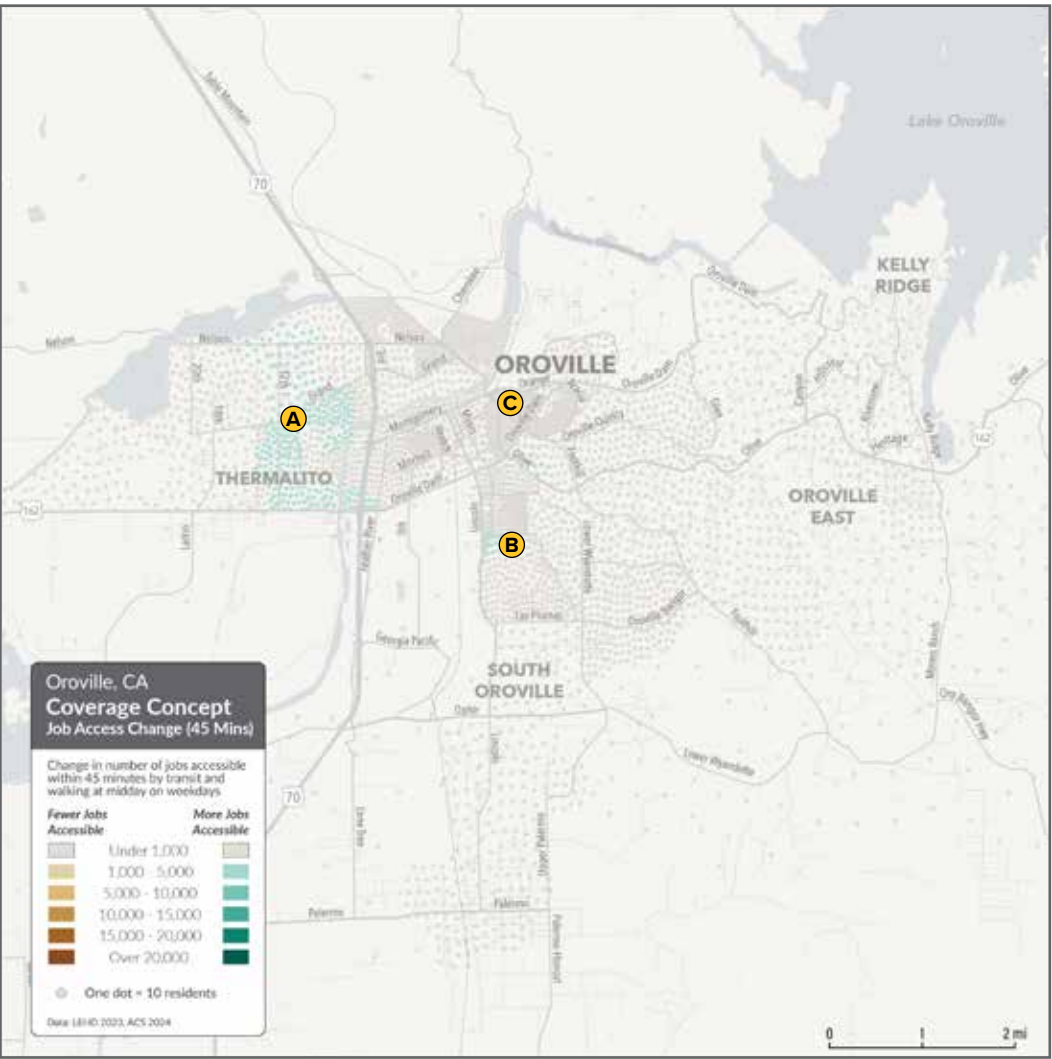
The most significant new feature is the Thermalito FLEX Zone **(A)**, a demand-response service where riders can pre-schedule curb-to-curb trips within Thermalito or connect to Route 25 at the Walmart Supercenter on Feather River Boulevard. This opens up access for Thermalito residents who currently have no nearby fixed-route service.

At 60 minutes of travel, additional gains appear around Orange Avenue **(B)**, and south along Lincoln Street **(C)**, from streamlining Routes 26 and 27 to make them more direct and reliable.

No areas see significant reductions in access under the Coverage Concept. The network is broad enough that most residents retain similar service to today.

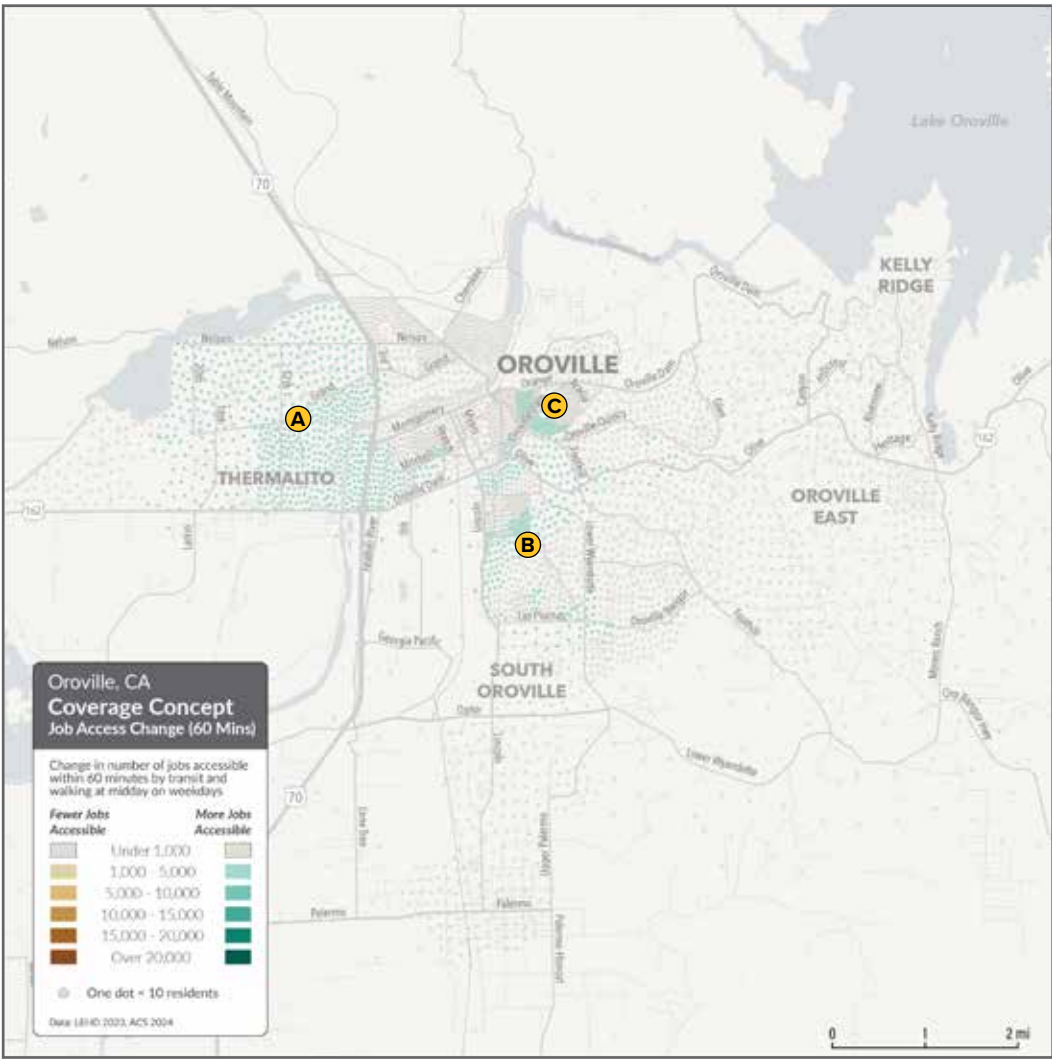
The result: the average Oroville resident can reach +7% more jobs within 45 minutes and +18% more jobs within 60 minutes under the Coverage Concept compared to today's network.

Figure 59: Oroville's Coverage Concept, 45-min access change



The average Oroville resident can reach **150 more jobs (+7%)** within 45 minutes under the Coverage Concept compared to today.

Figure 60: Oroville's Coverage Concept, 60-min access change



The average Oroville resident can reach **600 more jobs (+18%)** within 60 minutes under the Coverage Concept compared to today.

Ridership Concept Access Change in Oroville

Access Change by Area in Oroville

In Oroville, the Ridership Concept produces a sharper version of the same trade-off seen in Chico. The city is smaller, the corridors are more concentrated, and the gains are larger for residents near those corridors, but the losses for residents further away are also more significant.

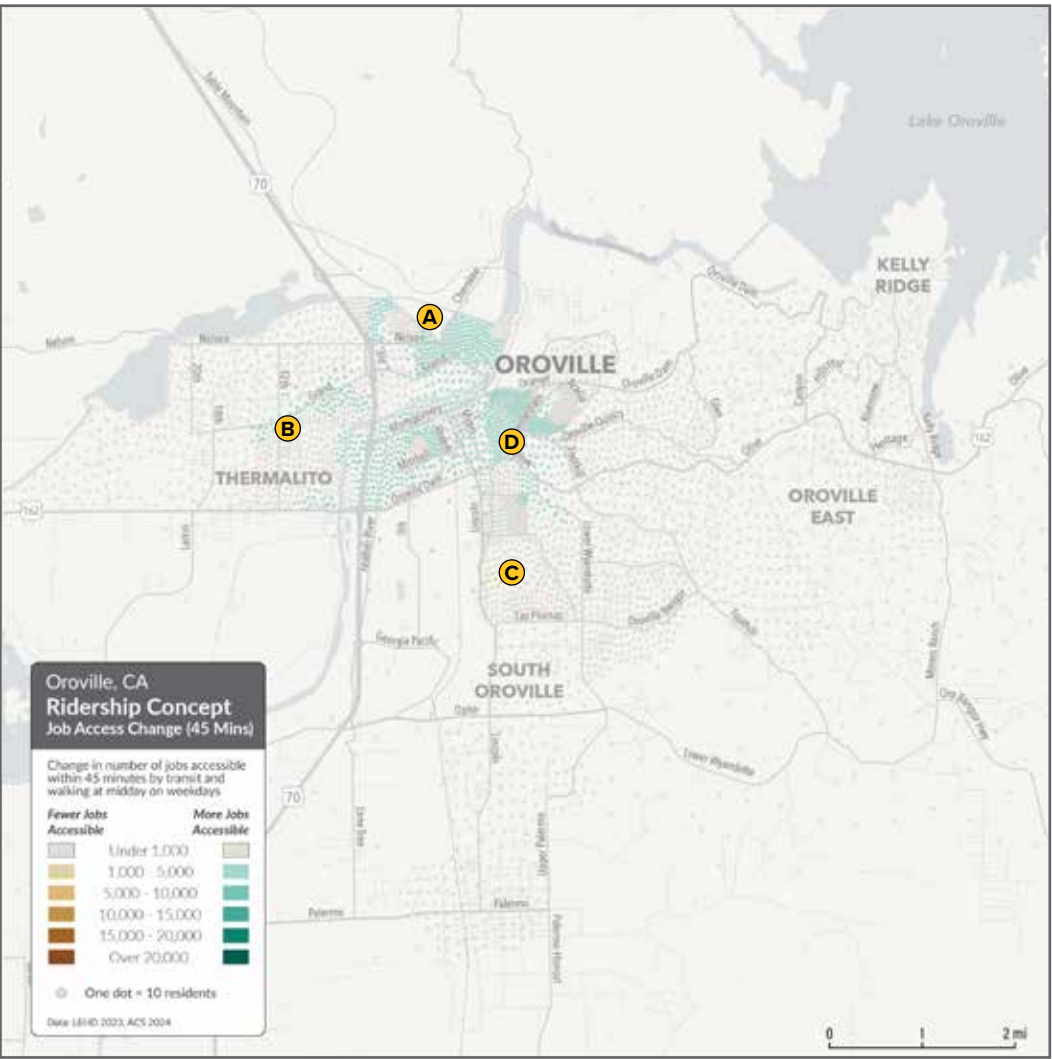
At 45 minutes of travel, gains already appear around the County Center and Table Mountain Boulevard **A**, and the neighborhoods near Orange Avenue and the Oroville Hospital **D**. All three are anchored by the Ridership Concept's 30-minute corridors.

At 60 minutes, Route 21's loop through Thermalito **B** generates access gains that the Coverage Concept's FLEX Zone does not produce in the same way. This is because fixed-route service at 30-minute frequency reaches more destinations than a demand-response service.

The areas of reduced access reflect where service is eliminated: Route 27 to South Oroville **C** and Route 26's branch to the Gold Casino along Olive Highway are not continued in the Ridership Concept. Residents in those areas lose access to fund frequency improvements elsewhere.

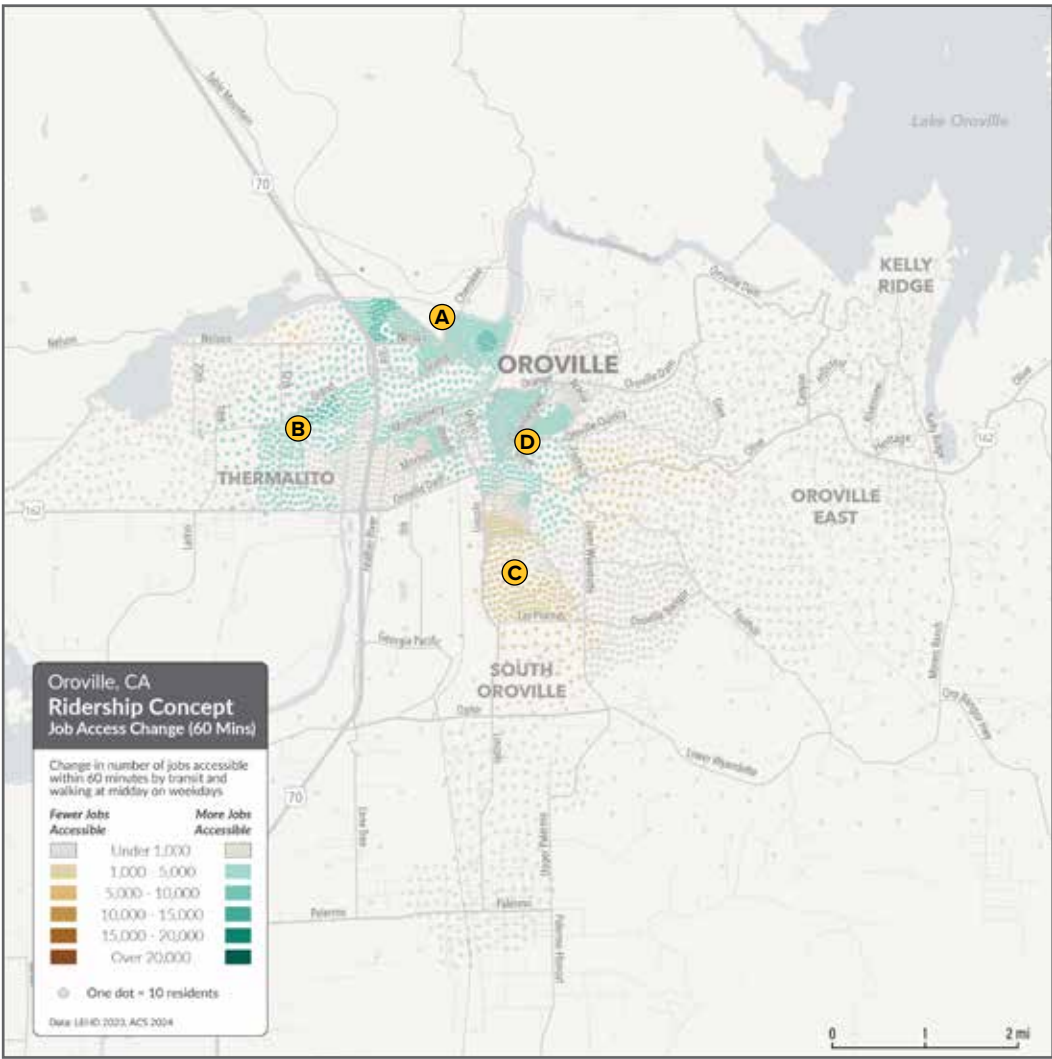
The result: the average Oroville resident can reach +52% more jobs within 45 minutes and +55% more jobs within 60 minutes under the Ridership Concept compared to today's network.

Figure 61: Oroville's Ridership Concept, 45-min access change



**The average Oroville resident can reach
1,200 more jobs (+52%)
within 45 minutes under the
Ridership Concept
compared to today.**

Figure 62: Oroville's Ridership Concept, 60-min access change



**The average Oroville resident can reach
1,800 more jobs (+55%)
within 60 minutes under the
Ridership Concept
compared to today.**

Impacts on Equity and High Need Populations

Because transit needs are not evenly distributed, we also checked whether each concept’s gains reach the groups most likely to depend on transit.

The charts on the right show that access improvements hold up, and are often larger, when we narrow the focus to low-income residents, households without cars, or residents of color.

Low-Income Residents

Low-income residents, defined here as those living at or below 150% of the federal poverty line, gain access in the same pattern as residents overall. At 60 minutes of travel, their percentage gains are often larger than for the population as a whole.

Household without Cars

Households without cars are a strong indicator of who will value these improvements most. For people without a car, more reachable jobs and destinations translate directly into real options. As transit becomes useful for more day-to-day trips, more of these residents are likely to use it.

Residents of Color

The increase in jobs reachable by residents of color matches the gain for all residents, and in some cases exceeds it. Both concepts show this pattern. Under the Ridership Concept, job access for residents of color rises substantially in both cities, from roughly +54% to +82%, depending on the city and travel time.

Figure 63: Chart showing change in Chico’s average access in 45-minutes between the Existing Network, the Coverage Concept, and the Ridership Concept.

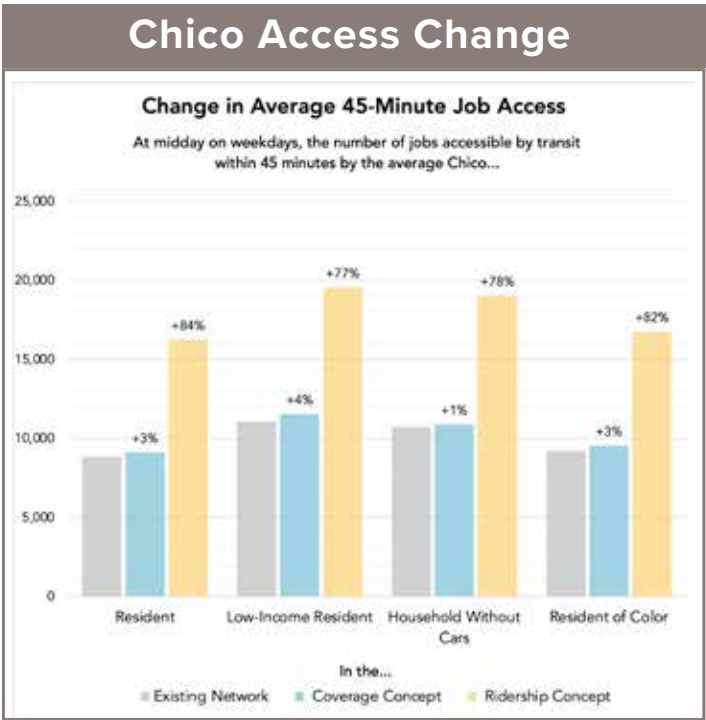


Figure 64: Chart showing change in Oroville’s average access in 45-minutes between the Existing Network, the Coverage Concept, and the Ridership Concept.

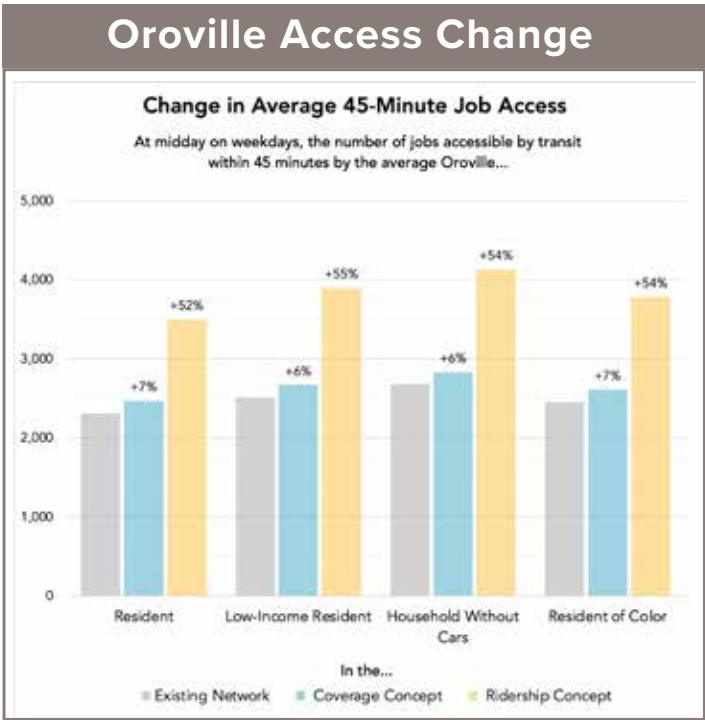


Figure 65: Chart showing change in Chico’s average access in 60-minutes between the Existing Network, the Coverage Concept, and the Ridership Concept.

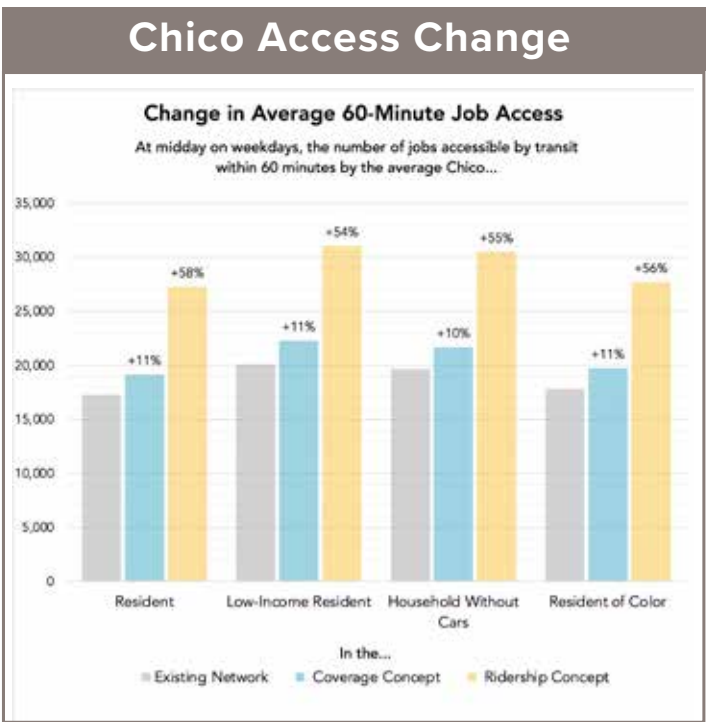
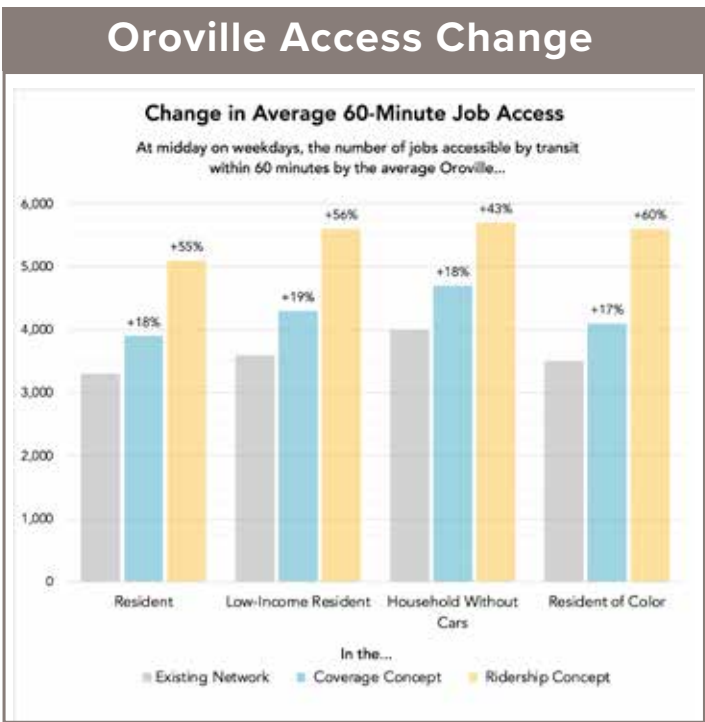


Figure 66: Chart showing change in Oroville’s average access in 60-minutes between the Existing Network, the Coverage Concept, and the Ridership Concept.



Outcomes Summary for Chico

This page summarizes two measures of how each concept performs in Chico compared to today. Proximity to service measures how many residents and jobs are within a half-mile walk of a bus stop. Access to opportunities measures how many jobs the average resident can reach within a given travel time.

The two measures tell different stories, and understanding both is important for evaluating the trade-offs.

Proximity to Service

The **Coverage Concept** puts more residents and jobs near a bus stop than today’s network.

- All residents: 3% more near any service
- Low-income residents: 2% more near any service
- Residents of color: 3% more near any service
- Jobs: 2% more near any service

The **Ridership Concept** serves fewer streets, so fewer residents and jobs are within a half-mile of a stop. Those stops are served far more frequently.

- All residents: 8% fewer near any service
- Low-income residents: 5% fewer near any service
- Residents of color: 8% fewer near any service
- Jobs: 5% fewer near any service

Access to Opportunities

The **Coverage Concept**, in Chico, increases the number of jobs reachable to:

- All residents: 1,950 more jobs (+11%) within 60 minutes and 300 more jobs (+3%) within 45 minutes of travel.
- Individuals living in poverty: 2,250 more jobs (+11%) within 60 minutes and 450 more jobs (+4%) within 45 minutes of travel.
- People of color: 1,950 more jobs (+11%) within 60 minutes and 300 more jobs (+4%) within 45 minutes of travel.
- Households without cars: 1,950 more jobs (+10%) within 60 minutes and 150 more jobs (+2%) within 45 minutes of travel.

The **Ridership Concept**, in Chico, increases the number of jobs reachable to:

- All residents: 10,050 more jobs (+58%) within 60 minutes and 7,350 more jobs (+84%) within 45 minutes of travel.
- Individuals living in poverty: 10,950 more jobs (+54%) within 60 minutes and 8,550 more jobs (+77%) within 45 minutes of travel.
- People of color: 9,900 more jobs (+56%) within 60 minutes and 7,500 more jobs (+82%) within 45 minutes of travel.
- Households without cars: 10,800 more jobs (+55%) within 60 minutes and 8,250 more jobs (+78%) within 45 minutes of travel.

Figure 67: Percentage of Chico residents, low-income residents, residents of color, and jobs within a half-mile of transit service at weekday midday, by frequency, under the Existing Network, Coverage Concept, and Ridership Concept.

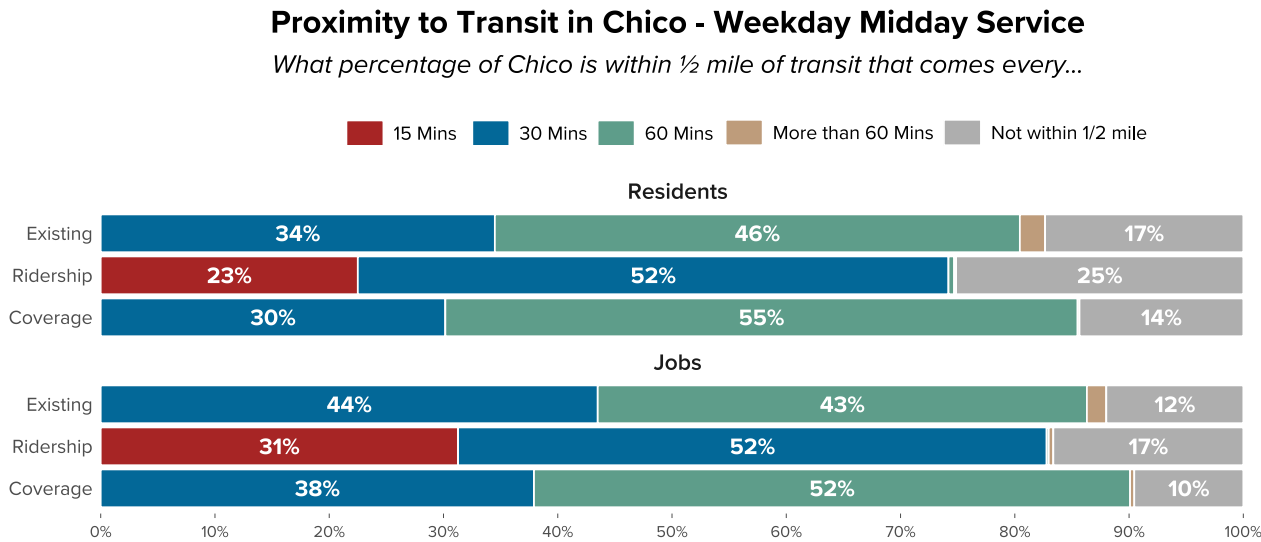


Figure 68: Change in the jobs accessible to Chico residents within 30, 45, and 60 minutes of travel by transit, comparing the Coverage and Ridership Concepts to today’s network.

Jobs reachable by...	Concept	30 Minutes of Travel		45 Minutes of Travel		60 Minutes of Travel	
		Total Change	% Change	Total Change	% Change	Total Change	% Change
All Residents	Coverage	0	-1%	300	3%	1,950	11%
	Ridership	1,500	33%	7,350	84%	10,050	58%
Residents Living in Poverty	Coverage	0	-1%	450	4%	2,250	11%
	Ridership	2,100	39%	8,550	77%	10,950	54%
Zero Veh. Households	Coverage	-150	-3%	150	2%	1,950	10%
	Ridership	1,650	30%	8,250	78%	10,800	55%
Minority Residents	Coverage	0	-1%	300	4%	1,950	11%
	Ridership	1,650	35%	7,500	82%	9,900	56%

Outcomes Summary for Oroville

This page summarizes proximity to service and access to opportunities for Oroville under each concept. Oroville starts from a lower baseline than Chico, nearly half of residents have no weekday midday service today. Both concepts improve on that baseline, but in very different ways.

Proximity to Service

In Oroville, the **Coverage Concept** would place more residents and jobs within a half-mile radius of a bus stop.

- All residents would experience an increase in any service by +9%.
- Residents living in poverty would see an increase in any service by +8%.
- Minority residents would benefit from an increase in any service by +10%.
- Jobs would also see an increase in any service by +1%.

The **Ridership Concept** concentrates service on core corridors, reducing the total number of stops but serving them far more frequently.

- All residents: 18% fewer near any service
- Low-income residents: 14% fewer near any service
- Residents of color: 16% fewer near any service
- Jobs: 11% fewer near any service

Access to Opportunities

The **Coverage Concept**, in Oroville, increases the number of jobs reachable to:

- All residents: 600 more jobs (+18%) within 60 minutes and 150 more jobs (+7%) within 45 minutes of travel.
- Individuals living in poverty: 750 more jobs (+19%) within 60 minutes and 150 more jobs (+7%) within 45 minutes of travel.
- People of color: 600 more jobs (+18%) within 60 minutes and 150 more jobs (+6%) within 45 minutes of travel.
- Households without cars: 750 more jobs (+17%) within 60 minutes and 150 more jobs (+6%) within 45 minutes of travel.

The **Ridership Concept**, in Oroville, increases the number of jobs reachable to:

- All residents: 1,800 more jobs (+55%) within 60 minutes and 1,200 more jobs (+52%) within 45 minutes of travel.
- Individuals living in poverty: 1,950 more jobs (+56%) within 60 minutes and 1,350 more jobs (+55%) within 45 minutes of travel.
- People of color: 2,100 more jobs (+60%) within 60 minutes and 1,350 more jobs (+54%) within 45 minutes of travel.
- Households without cars: 1,650 more jobs (+41%) within 60 minutes and 1,500 more jobs (+55%) within 45 minutes of travel.

Figure 69: Percentage of Oroville residents, low-income residents, residents of color, and jobs within a half-mile of transit service at weekday midday, by frequency, under the Existing Network, Coverage Concept, and Ridership Concept.

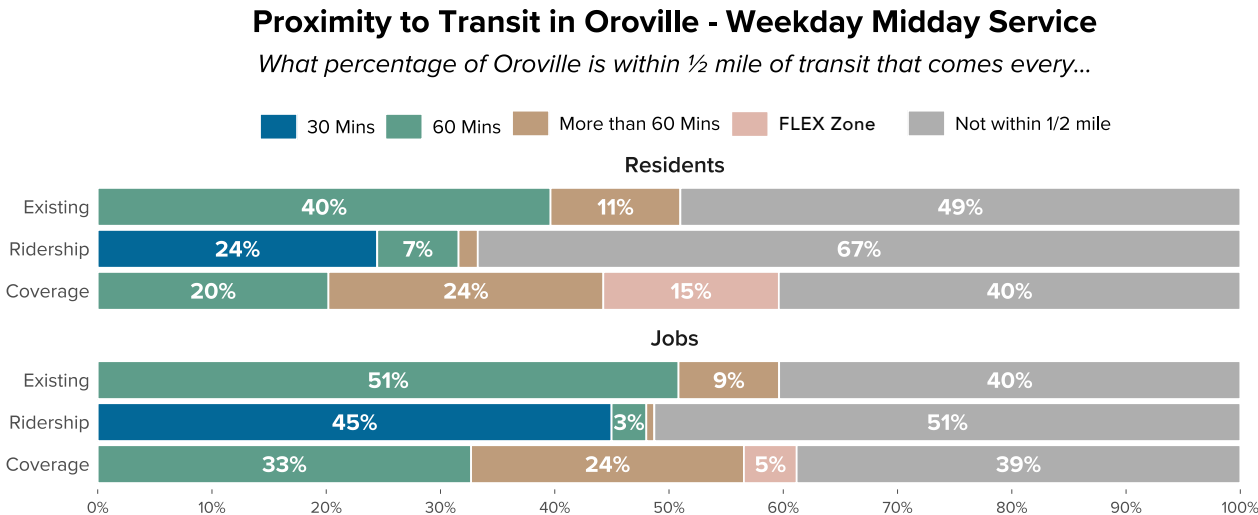


Figure 70: Change in the jobs accessible to Oroville residents within 30, 45, and 60 minutes of travel by transit, comparing the Coverage and Ridership Concepts to today's network.

Jobs reachable by...	Concept	30 Minutes of Travel		45 Minutes of Travel		60 Minutes of Travel	
		Total Change	% Change	Total Change	% Change	Total Change	% Change
All Residents	Coverage	0	0%	150	7%	600	18%
	Ridership	150	8%	1,200	52%	1,800	55%
Residents Living in Poverty	Coverage	0	0%	150	7%	750	19%
	Ridership	150	10%	1,350	55%	1,950	56%
Zero Veh. Households	Coverage	0	0%	150	6%	750	17%
	Ridership	300	13%	1,500	55%	1,650	41%
Minority Residents	Coverage	0	0%	150	6%	600	18%
	Ridership	150	8%	1,350	54%	2,100	60%



8

Next Steps

How do we decide? With Your Help

What type of Transit Network?

The design of a transit network should reflect what its community values. In the next phase of this project, we want to hear from the communities of Chico, Oroville, and Butte County which network would best serve their needs.

We will conduct surveys, hold community events, and reach out across both cities. We encourage anyone reading this report to take the survey and to share it with others who have a stake in how transit works here.

As you think about where on the ridership-to-coverage spectrum you would prefer to see Chico and Oroville, consider these questions:

- What network would best suit my day-to-day life?
- What network would work best for my neighborhood?
- What network would work best for the city as a whole?
- What network would best serve the communities I think transit should prioritize?
- Do Chico and Oroville have the same goals and priorities?

Where on this spectrum should Chico be?

Where on this spectrum should Oroville be?



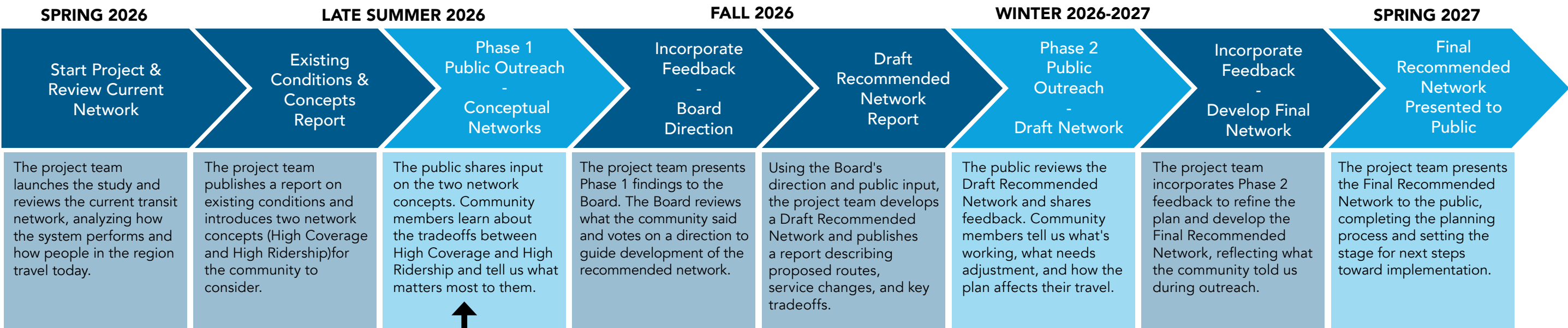
Next Steps

This report is the first step toward a recommended future network for Chico and Oroville. The study launched in Spring 2026 and is expected to conclude in Spring 2027.

After studying the existing network and the communities of Chico and Oroville, the project team joined B-Line staff and city and county leaders for a working session in May 2026 to develop the two conceptual networks presented here.

Over August, September, and October 2026, we will bring these concepts to the public through surveys and community events. Your input, along with that of your neighbors, will directly shape the Draft Recommended Network that follows. We encourage you to take the survey, attend an event, and share this report with anyone who has a stake in how transit works in Butte County.

After Phase 1 outreach concludes, the B-Line board will vote on a direction. The project team will then develop a Draft Recommended Network, which will go through a second round of public input before the final network is produced. The intent is to deliver a Final Recommended Network with a target implementation date by the end of Spring 2027.



WE ARE HERE | **TELL US WHAT YOU THINK**
SHARE WITH EVERYONE YOU KNOW IN CHICO AND OROVILLE!



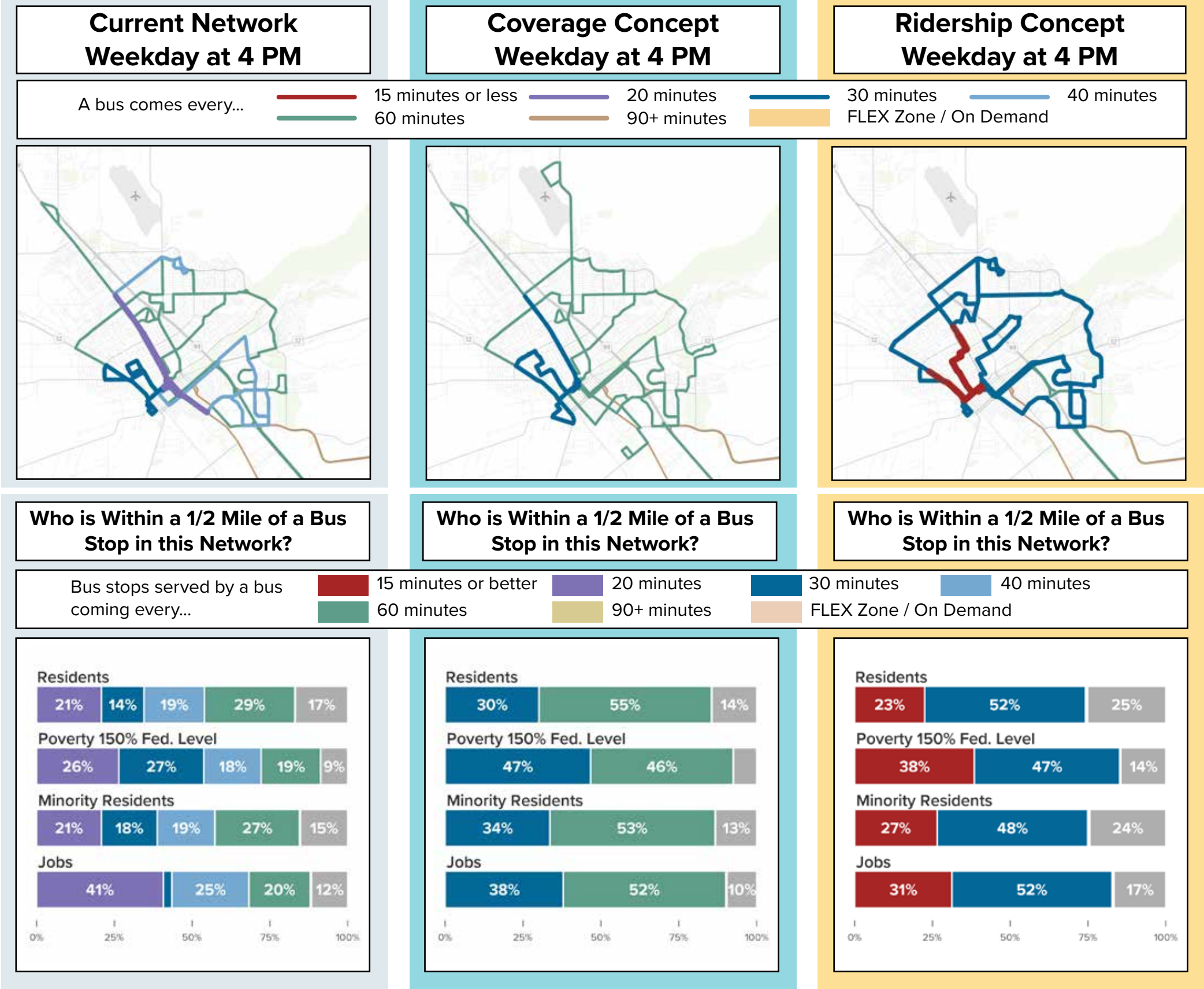
Appendix

Proximity to Transit in Chico on Weekdays at Rush Hour

Weekdays at Rush Hour

Today, 17% of Chico residents have no weekday service at 4 p.m. Both concepts perform identically to midday, since both are designed around consistent all-day service rather than peak boosting.

The trade-off: Coverage reaches 86% of residents versus 75% in Ridership, with no service better than 60 minutes. Ridership's all-day frequency means riders can rely on it throughout the day, but 25% of residents have no service at all, versus 14% in Coverage.

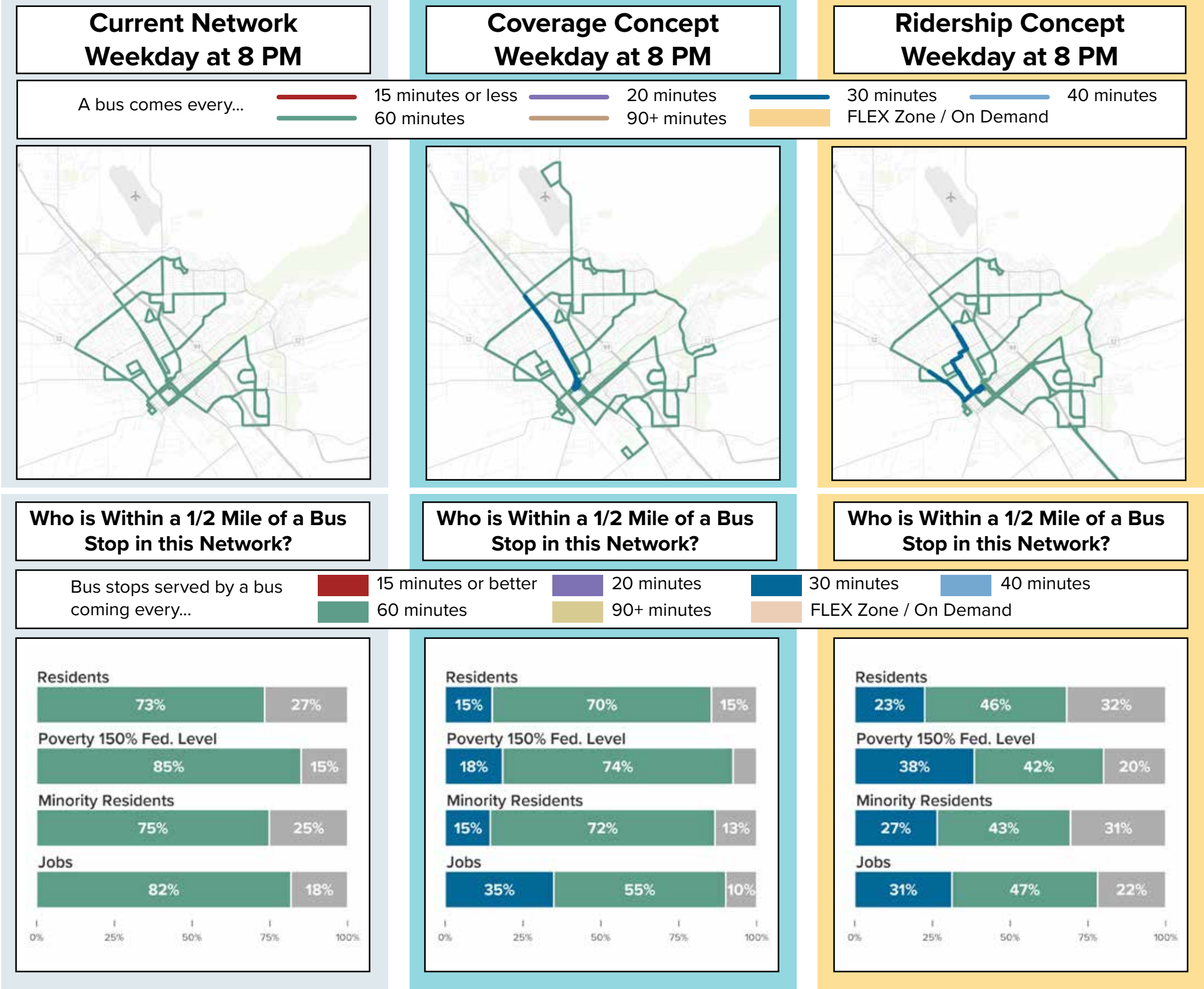


Proximity to Transit in Chico on Weekdays Evenings

Weekdays Evenings

Today, 27% of Chico residents have no evening service at 8 p.m. Both concepts maintain some 30-minute service past 8 p.m. This gives people traveling later in the day more useful options and a more reliable trip home at night.

The trade-off: Both Coverage and Ridership Concepts provide new 30-minute frequency during weekday evenings. The Coverage Concept expands the total number of people and jobs covered, while the Ridership provides more useful 30-minute frequency to low-income and minority residents.



Proximity to Transit in Chico on Saturdays at Midday

Saturdays Service

Today, 24% of Chico residents have no Saturday service. Both concepts adjust Saturday service, though they reach different populations and provide different frequencies along select corridors.

The trade-off: Coverage reaches more people on Saturdays, serving 82% of residents versus 68% in Ridership. Ridership serves fewer people, but it provides 30-minute Saturday service along corridors where none exists today.

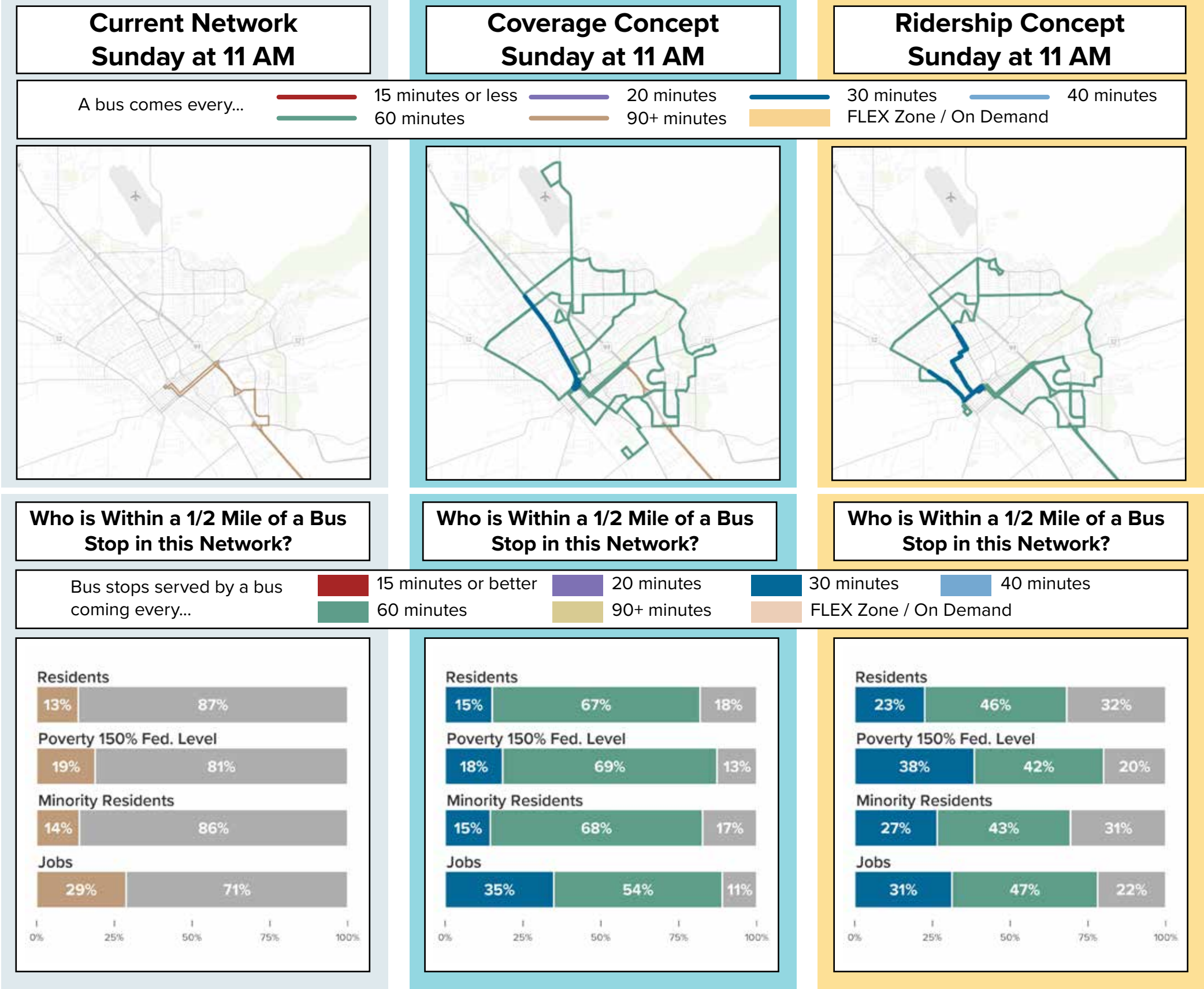


Proximity to Transit in Chico on Sundays at Midday

Sunday Service

Today, 87% of Chico residents have no Sunday local service. Sunday is where both concepts show their most dramatic improvement over the current network.

The trade-off: Both concepts are a dramatic improvement over today, when 87% of residents have no Sunday service at all. Coverage reaches more people overall. Ridership reaches fewer residents, but the routes it does run arrive every 30 minutes.

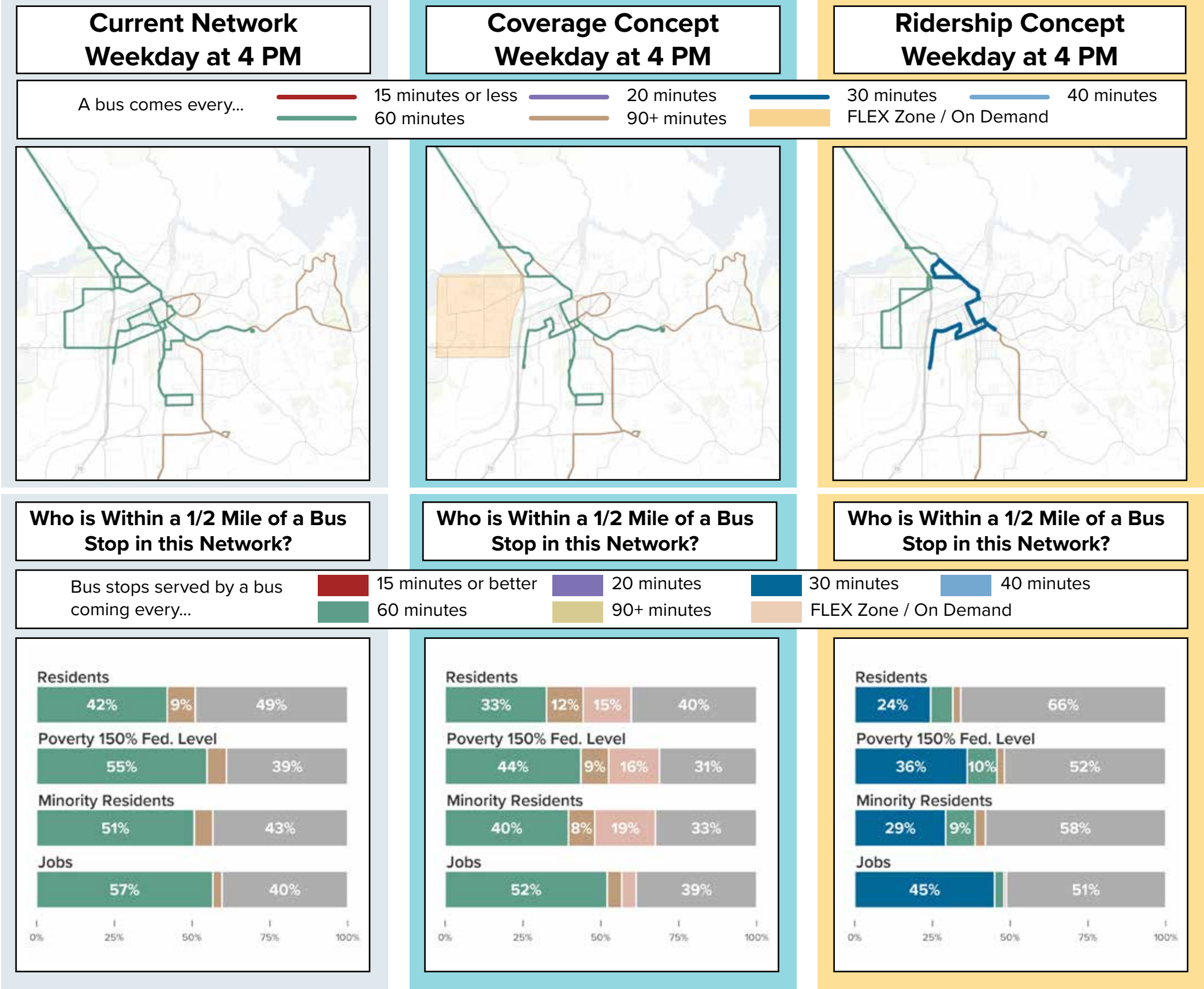


Proximity to Transit in Oroville on Weekdays at Rush Hour

Weekdays at Rush Hour

Today, 49% of Oroville residents have no weekday service at 4 p.m. Both concepts maintain consistent service and frequencies during rush hours and midday.

The trade-off: Coverage reaches 60% of residents versus 34% in Ridership, which falls below today's 51%. Ridership delivers a meaningfully better experience for those it serves, but the coverage loss is significant in a city where nearly half of residents already lack access.

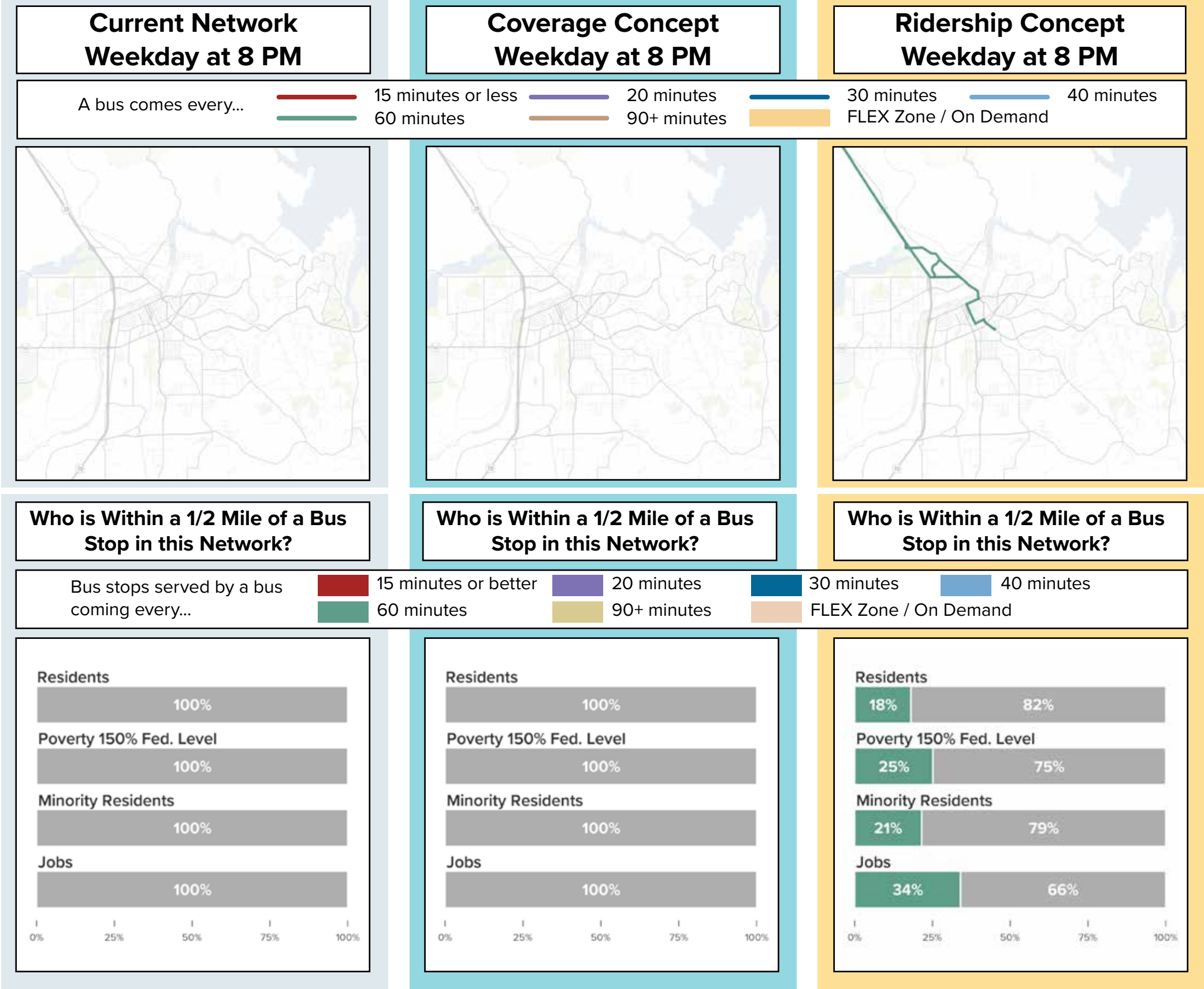


Proximity to Transit in Oroville on Weekday Evenings

Weekdays Evenings

Today, 100% of Oroville residents have no evening local service. The Coverage Concept does not change this. Only the Ridership Concept introduces evening service to Oroville, at 60-minute frequency on core corridors.

The trade-off: This is the one time period where Ridership clearly outperforms Coverage in Oroville. Coverage delivers no evening service. The Ridership Concept would continue to serve 18% of residents with 60-minute frequency. If evening service in Oroville is a community priority, only the Ridership Concept delivers it.

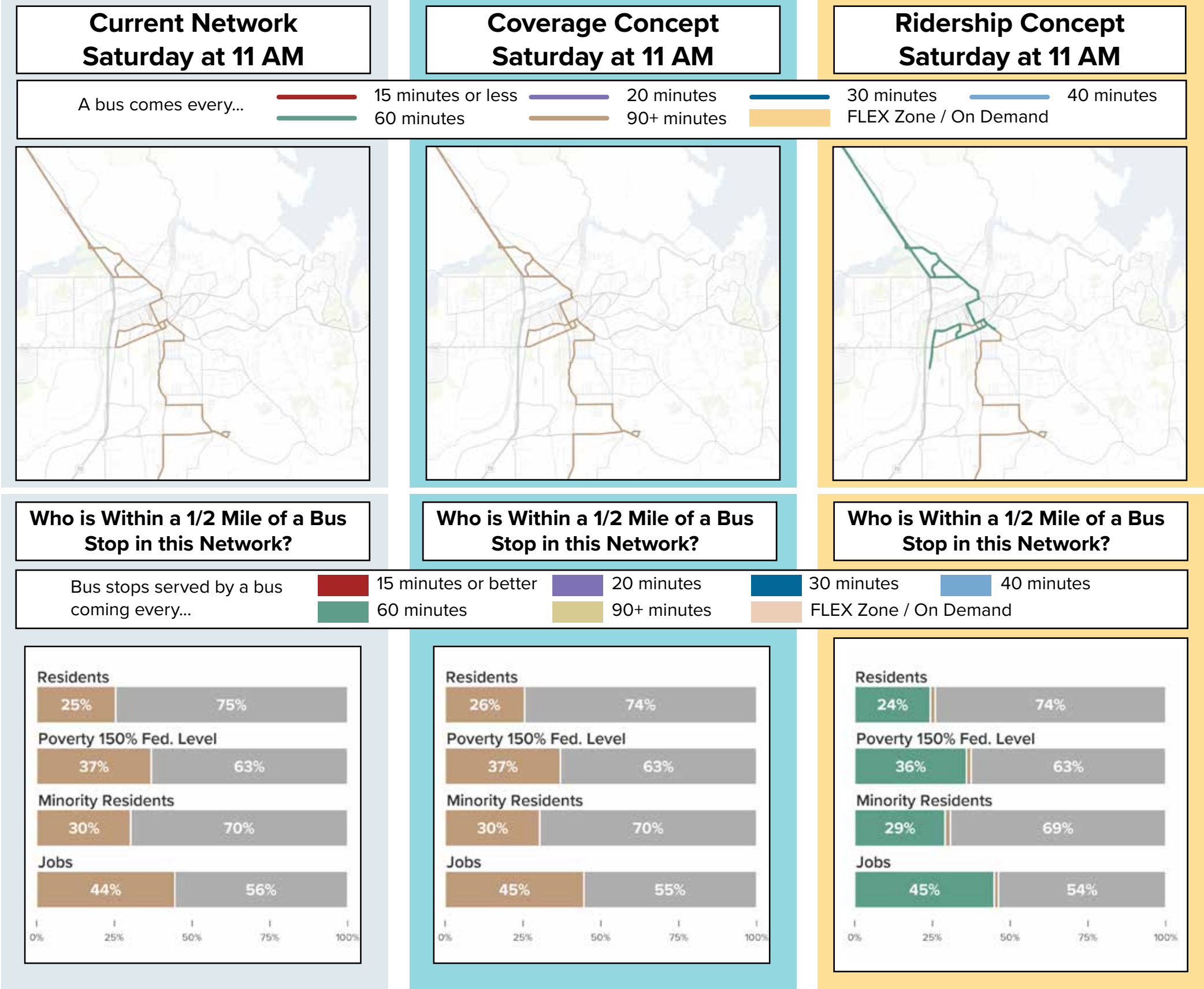


Proximity to Transit in Oroville on Saturdays at Midday

Saturdays at Midday

Today, 75% of Oroville residents have no Saturday local service. Both concepts make a modest improvement, and the numbers are nearly identical between them. The best either concept delivers on Saturdays in Oroville is a bus every 60 minutes.

The trade-off: Saturday coverage in Oroville is similar between today's network and the Coverage Concept. The Ridership Concept would introduce 60-minute frequency routes along key corridors on Saturdays.



Proximity to Transit in Oroville on Sundays at Midday

Sundays at Midday

Today, 78% of Oroville residents have no Sunday local service. Both concepts make a modest improvement, and the numbers are nearly identical between them. The Ridership Concept provides hourly service, but reaches fewer locations.

The trade-off: Sunday coverage in Oroville is nearly identical between today's network and the Coverage Concept. The Ridership Concept would provide hourly service along the corridors connecting downtown Oroville, the County Center, and Chico to the north. For a rider in central Oroville on a Sunday, that is the difference between having a bus and not having one at all.

