

# Intercity Transit: Transit 101



Prepared by: Rob LaFontaine, Planning Deputy Director  
Presented to the Authority Board, April 3, 2024

# Intercity Transit: Transit 101



# Service Area

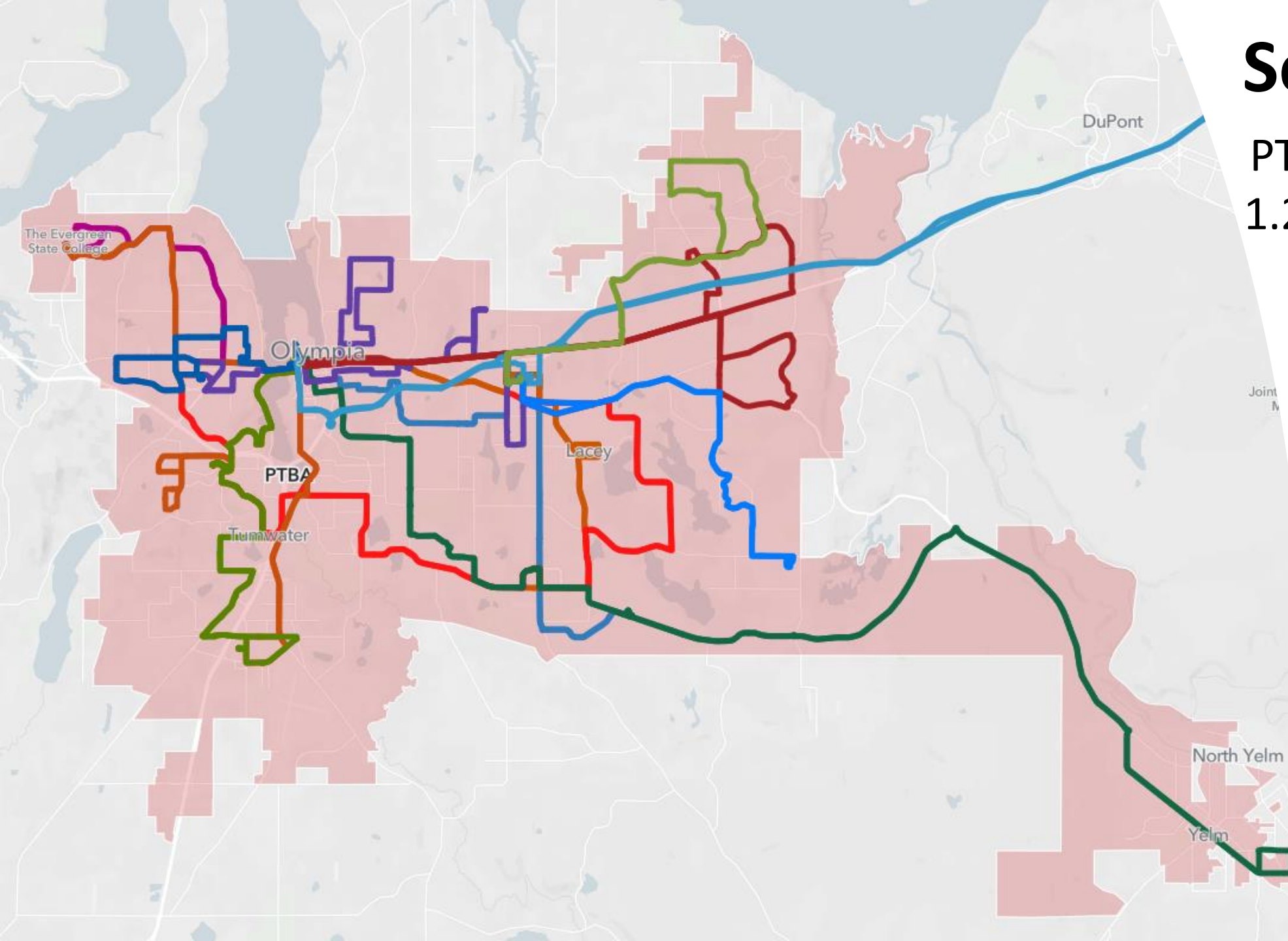
PTBA (RCW 36.57A)

1.2% Local Sales Tax

## *Urban Growth Area*

*"... to better lay the foundation for increased revenues needed for Intercity Transit to provide needed urban services, the boundaries of Intercity Transit should be reduced to include approximately the urban growth areas of the cities of Olympia, Lacey and Tumwater, with an extension to the city of Yelm."*

-PTIC Resolution, April 2002





# Services We Provide: “Mode”

- Fixed Route Bus
  - Local service, of various types
  - Commuter Bus to Pierce County
- *Dial-A-Lift* (ADA Paratransit)
  - $\frac{3}{4}$  of a mile within fixed route
- Other modes
  - Vanpool
  - [Future] On-Demand (micro-transit)
  - Bus Rapid Transit (BRT)
  - Rail (Sound Transit & WSDOT)



*Internal*  
Resources



*External*  
Community

*Planning Discipline #1: Scheduling*  
**Measuring Service**

**Intercity Transit's Planning Schedulers:**

Steve Swan

Senior Planner

Brian Nagel

Senior Planning Scheduler

Paul Kierzek

Associate Planning Scheduler

# It's only a matter of time...

## Route 41 (40' bus)

33 minutes from OTC to TESC  
+22 minutes back to OTC  
=55 minutes of running time  
+ 5 minutes recovery  
=60 minutes total cycle

## Route 12 (40' bus)

39 minutes from OTC to L&I  
+46 minutes back to OTC  
=85 minutes of running time  
+ 5 minutes recovery  
=90 minutes total cycle

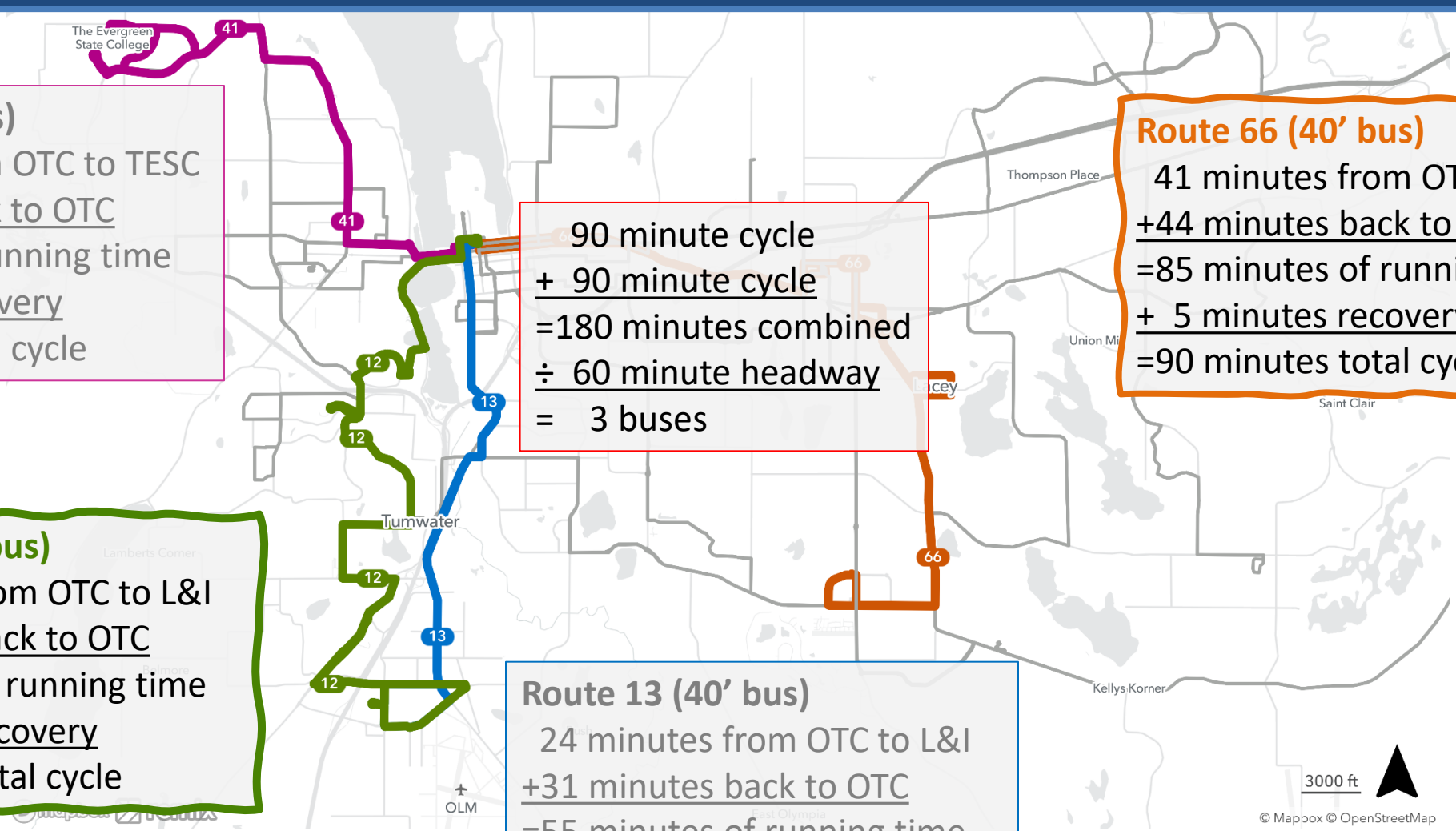
90 minute cycle  
+ 90 minute cycle  
=180 minutes combined  
÷ 60 minute headway  
= 3 buses

## Route 13 (40' bus)

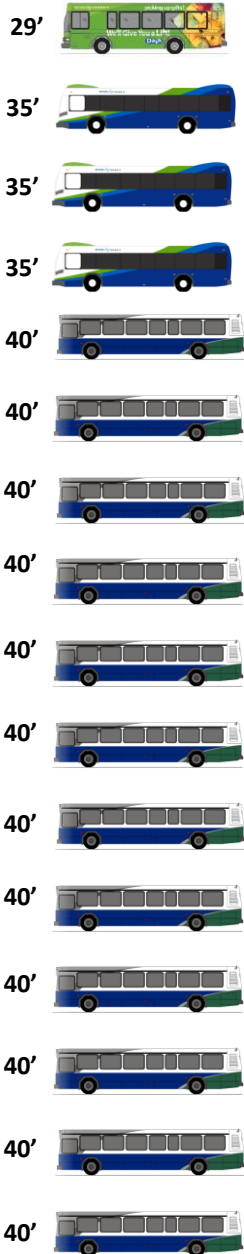
24 minutes from OTC to L&I  
+31 minutes back to OTC  
=55 minutes of running time  
+ 5 minutes recovery  
=60 minutes total cycle

## Route 66 (40' bus)

41 minutes from OTC to L&I  
+44 minutes back to OTC  
=85 minutes of running time  
+ 5 minutes recovery  
=90 minutes total cycle

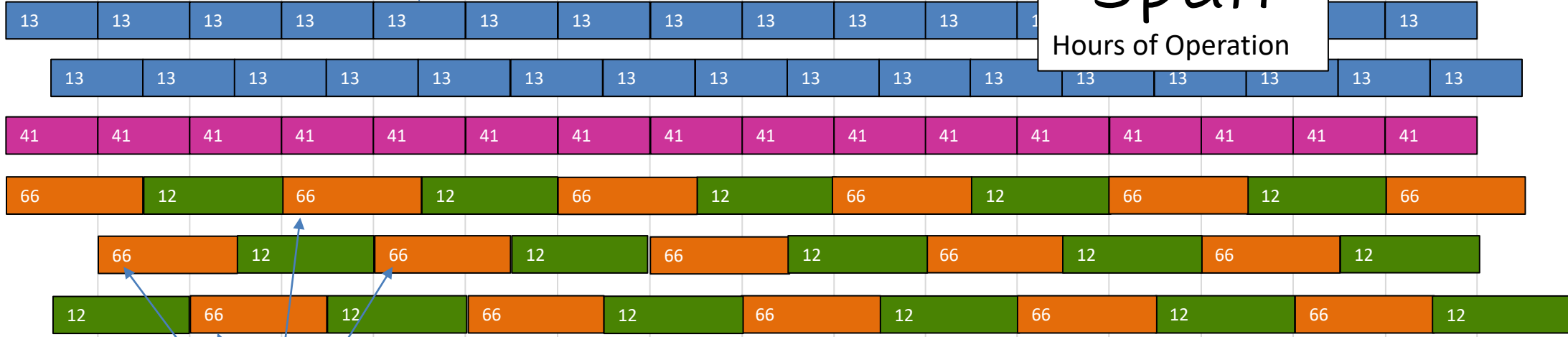


6 AM 7 AM 8 AM 9 AM 10 AM 11 AM 12 PM 1 PM 2 PM 3 PM 4 PM 5 PM 6 PM 7 PM 8 PM 9 PM 10 PM



**"Trip"**  
16 outbound trips  
16 inbound trips

**"Span"**  
Hours of Operation



**"Headway"**  
Frequency of Buses each Hour

**"Block"**  
All of the *trips* assigned to a bus



# IMPORTANCE OF FREQUENCY

## FREQUENCY AND SPAN



Provide more frequent service for a shorter time



Provide less frequent service for a longer time

- Wait less, travel conveniently
- Make connections **easily**
  - When the network is frequent, benefits are multiplied
- Trip security
  - Another bus is coming soon

## Imagine if ...



You showed up for work, but the elevator only came every 60 minutes

# IMPORTANCE OF SPAN OF SERVICE

## FREQUENCY AND SPAN



Provide more frequent service for a shorter time



Provide less frequent service for a longer time

## Imagine if ...



You showed up for work, but the elevator only operated between 6 to 9 a.m. and 3 to 6 p.m.

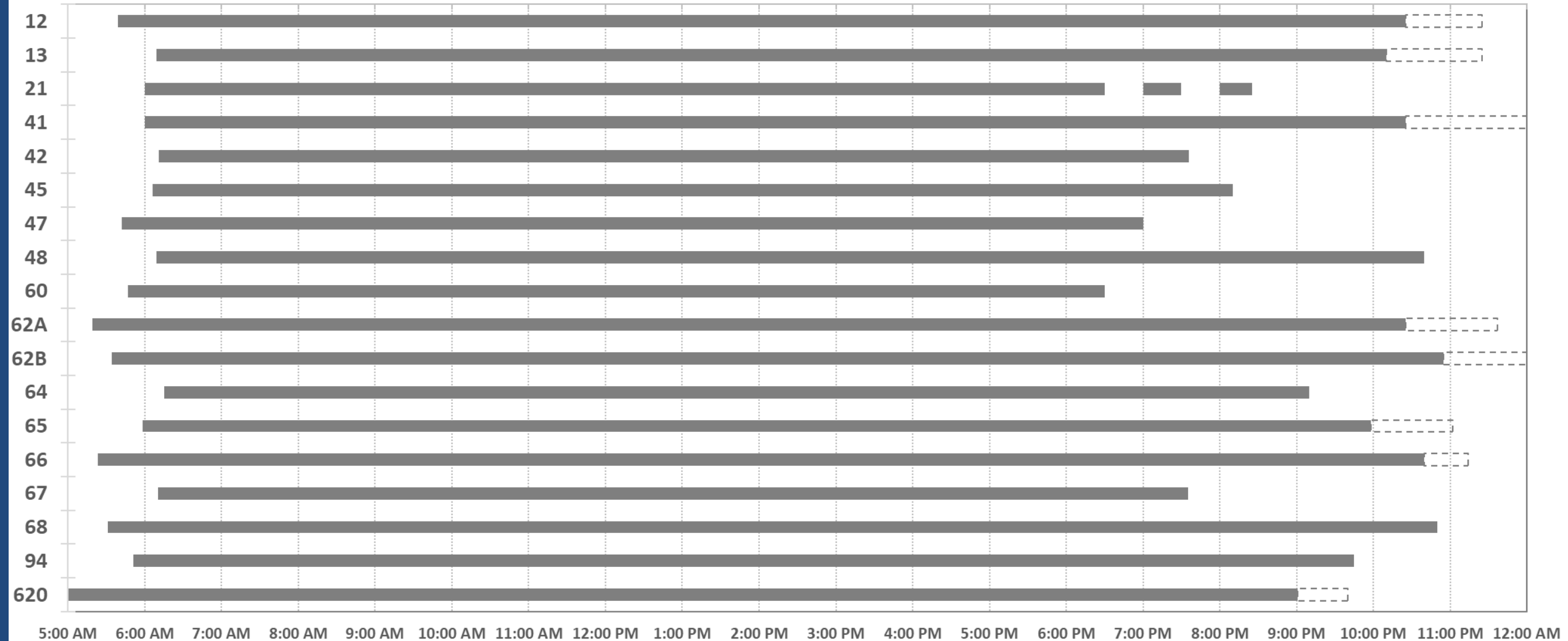
- **17 Active Local Routes**
  - Missing DASH, The One, and Nightline
- **1 Active Commuter Route (620)**



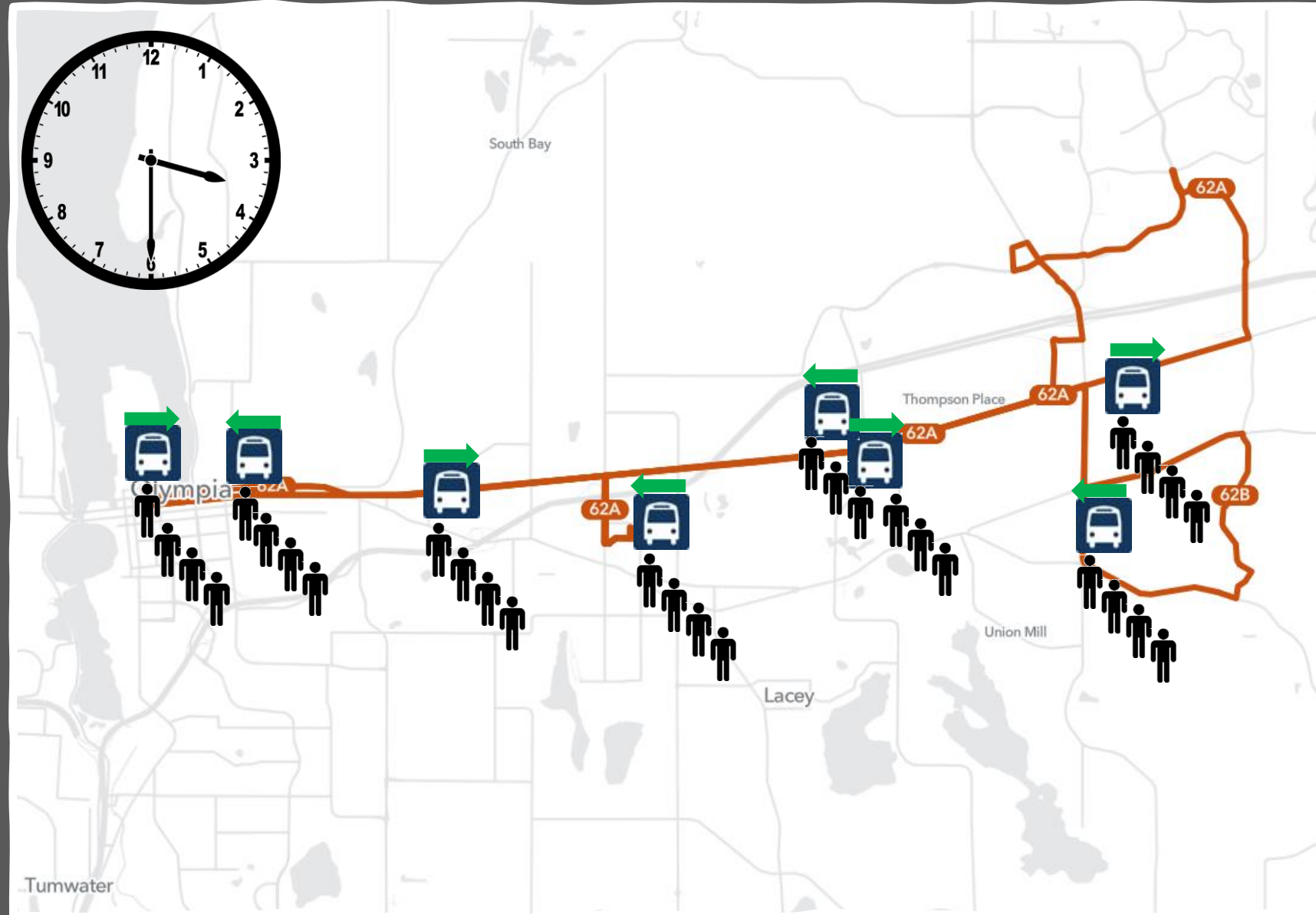
**Weekday Span of Service, by Route**

First Bus Out:  
5:04 AM

Last Bus In:  
11:05 PM



# Labor Resources



*Routes 62A and 62B*  
15-minute frequency,  
or “headway”  
= 8 buses (at 3:30 PM)

**30**  
Full-time  
Coach Operators



The Evergreen State College

48

Olympia

66

66

13

Tumwater

13

Lamberts Comer

Belmore

3000 ft

*Routes Blocked Together*

**Routes 13, 48 & 66**

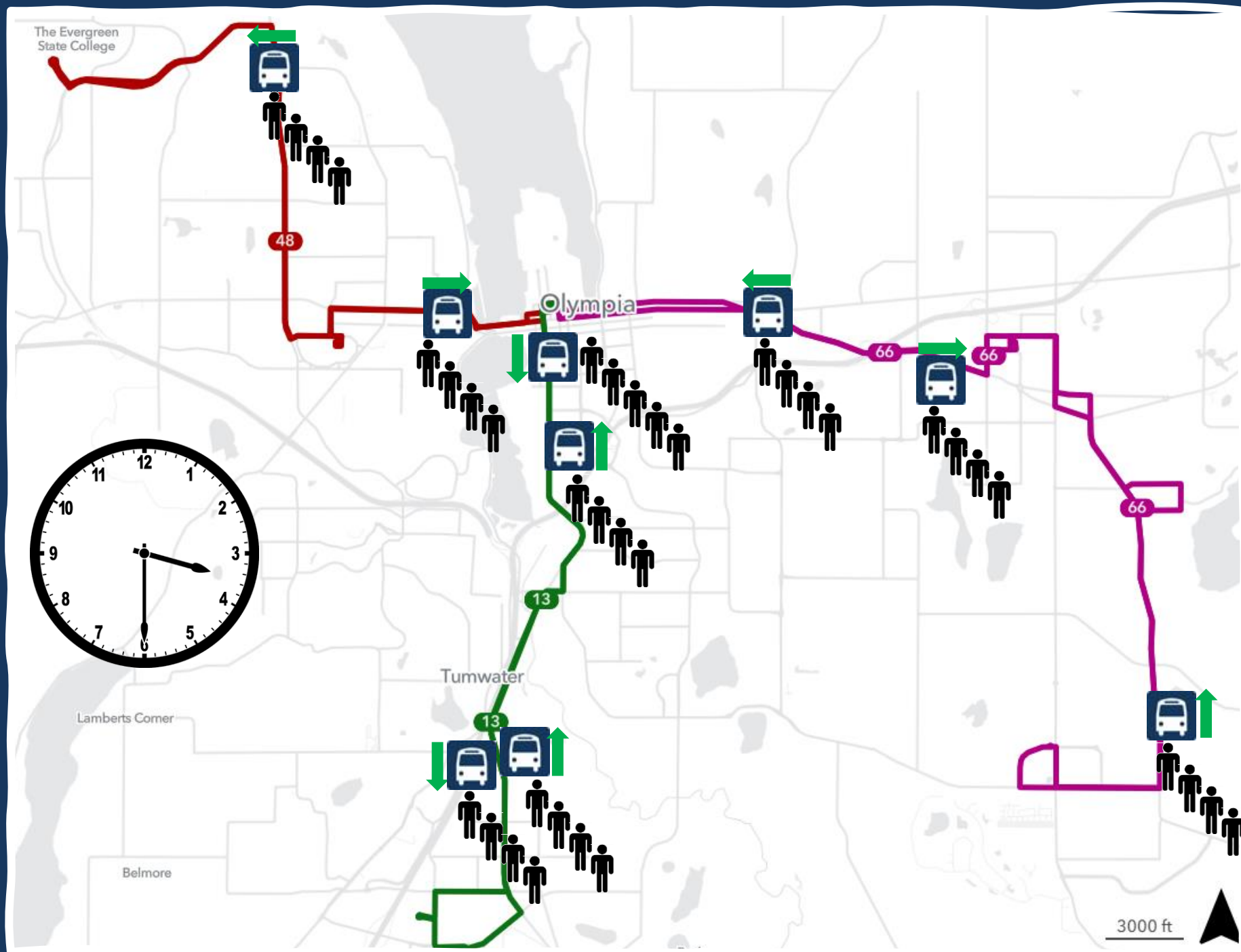
30-min freq. (Rtes. 48 & 66)

15-min freq. (Rte. 13)

= 9 buses (at 3:30 PM)



**37**  
Full-time  
Coach Operators





# Building Blocks: *Routes and Runs*

Bus “trips” are assigned to “Blocks” which are cut into Operator “Runs”, summarized on “Paddles”

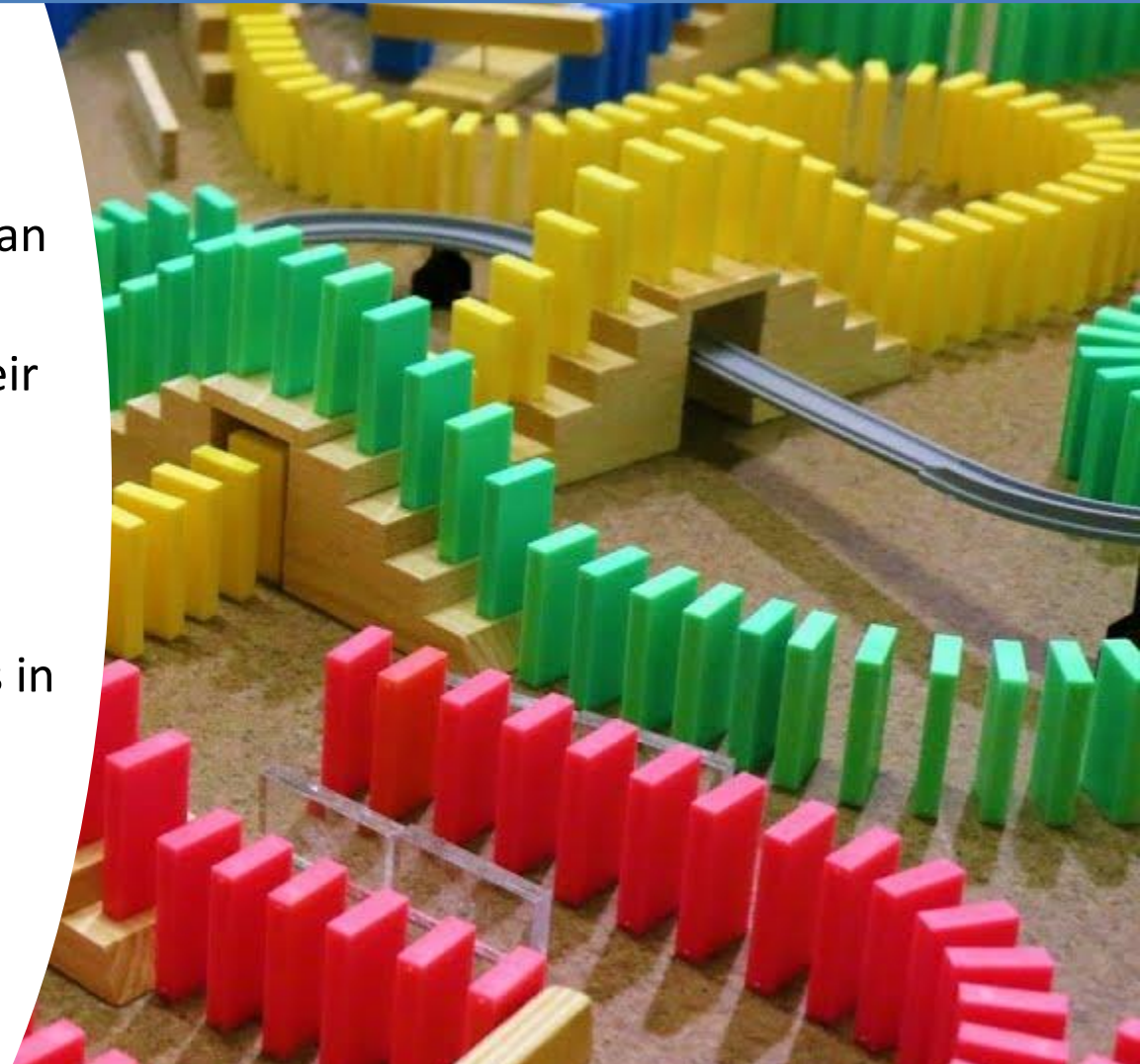
- Trips with varying lengths of time are blocked together (i.e. an “interline”) to balance headways
- Buses and Operators work on varying routes throughout their day—*lots of Math!!!*

The Schedule is the backbone (Dominos!)

- **Planning Schedulers** measure and monitor on-time performance to keep Intercity Transit’s buses and Operators in a constant state of motion.

Favored Sources of intelligence:

- GPS location Data (new Avail CAD/AVL system)
- Operator feedback (OCPC)
- Customer comments
- Direct observation



# Assembling the Schedule

## Balance Service with Budgeted Resources

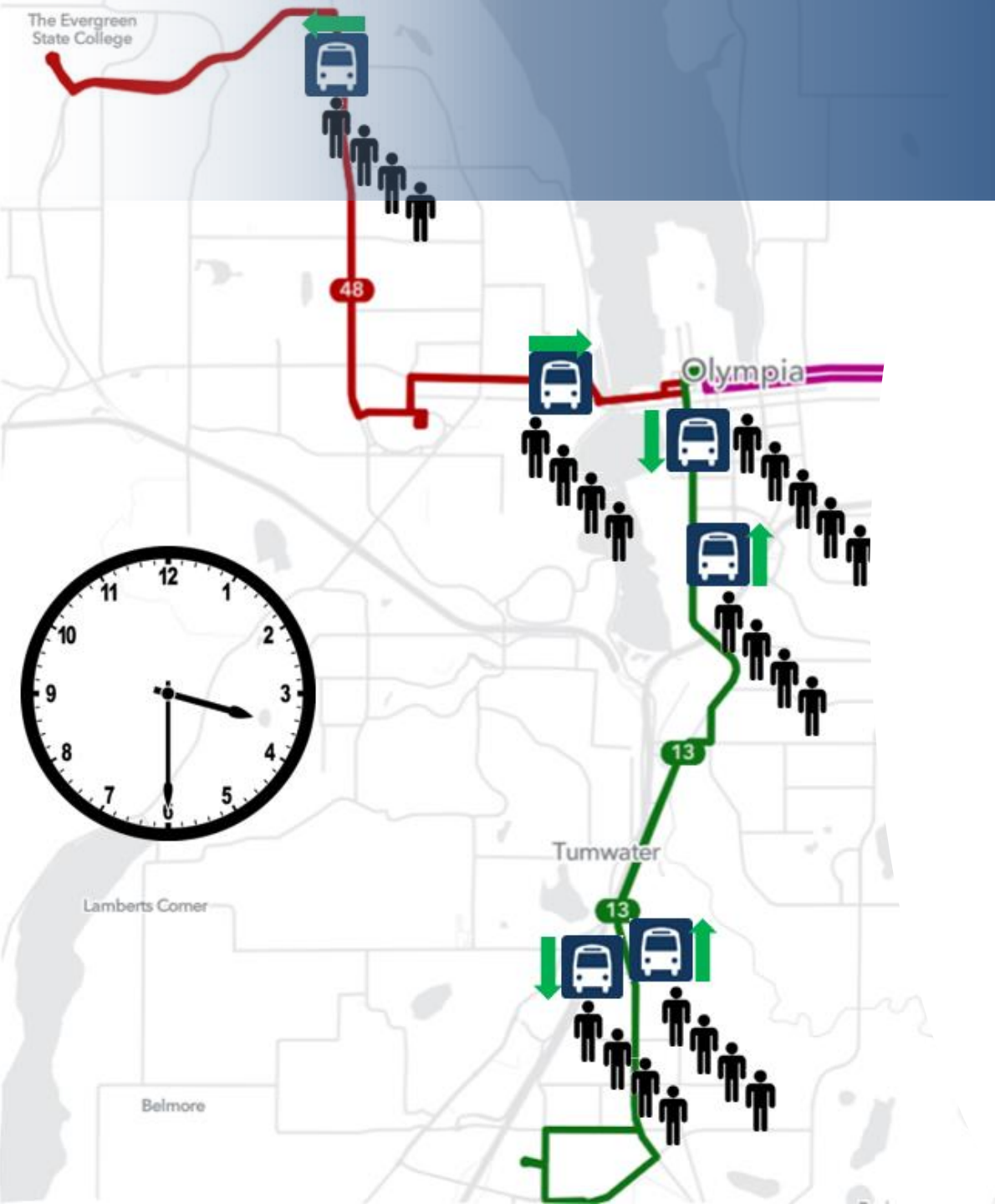
- Adjusting trips (span & frequency)
- Measuring the blocks and runs
- Forecast the Availability of Operators
- Financially sustainable

## Create work for the Buses

- Write a schedule of trips by Route
- Assign trips to Blocks

## Create work for the Operators

- Cut the blocks into Runs
- Roster the Runs into biddable work weeks



*Internal*  
Resources



*External*  
Community

*Planning Discipline #2: Access & Mobility*

# **Designing Service**

**Intercity Transit's Service Planners:**

Matt Kenney      Senior Planner

Claire Daniels      Associate Planner

Drew Goffeney      Associate Planner



# *“When will they ever add a stop to my neighborhood?”*

Considerations regarding route designs and bus stop placement

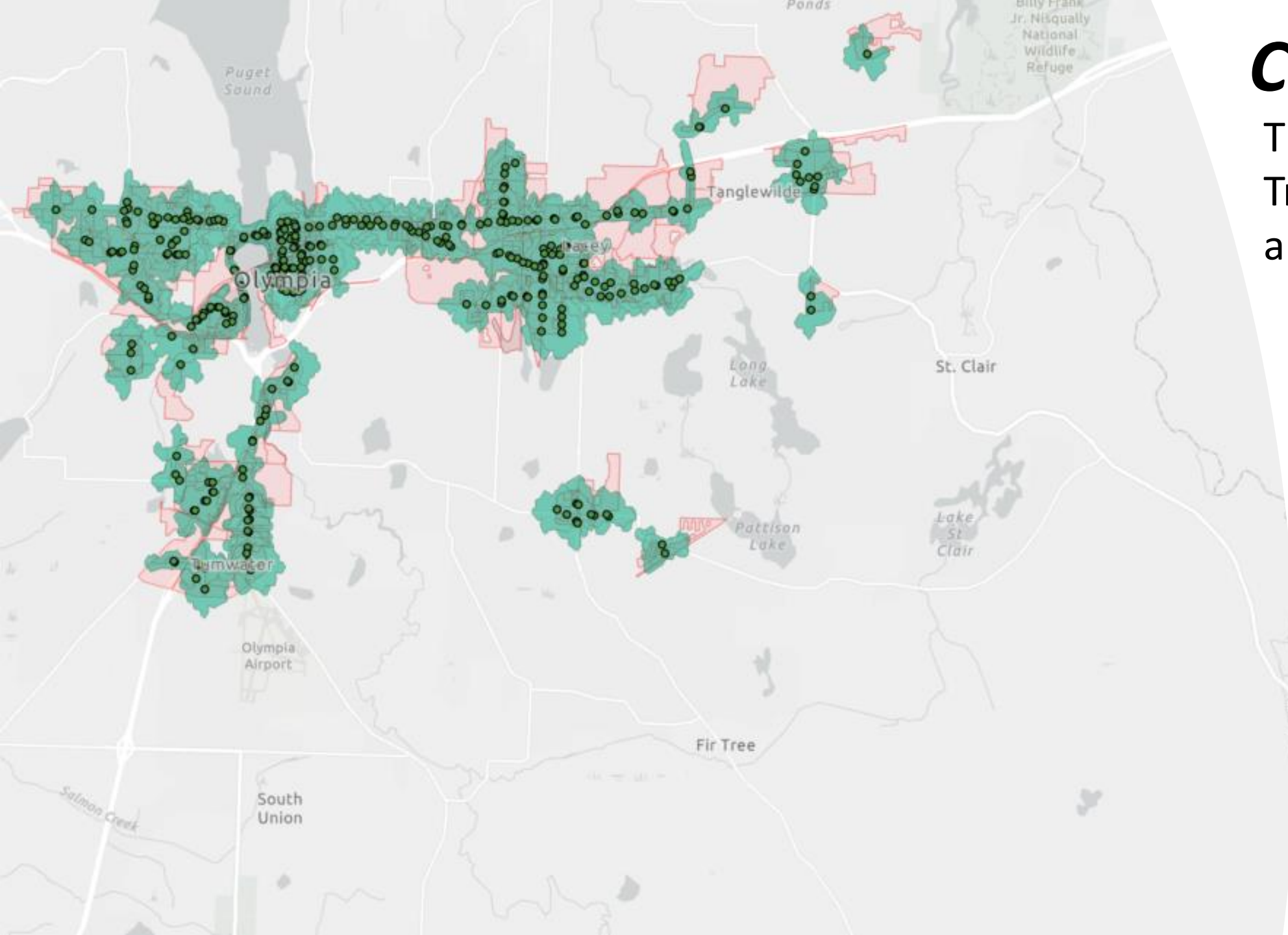
## Checklist

Evaluating Service:

- Equity
- Density
- Eligibility
- Operability







# *Count me in*

The consideration of  
Transit Availability  
and Proximity

## *Demographic Equity*

- New Standards & Policies
- Service Monitoring
- Route Profiles
- 2020 Census Data
- Rider Surveys
- Evaluating Service Change
- Measuring Disparity
- Magnitude of Adversity

# Density: *Fish where the fish are*

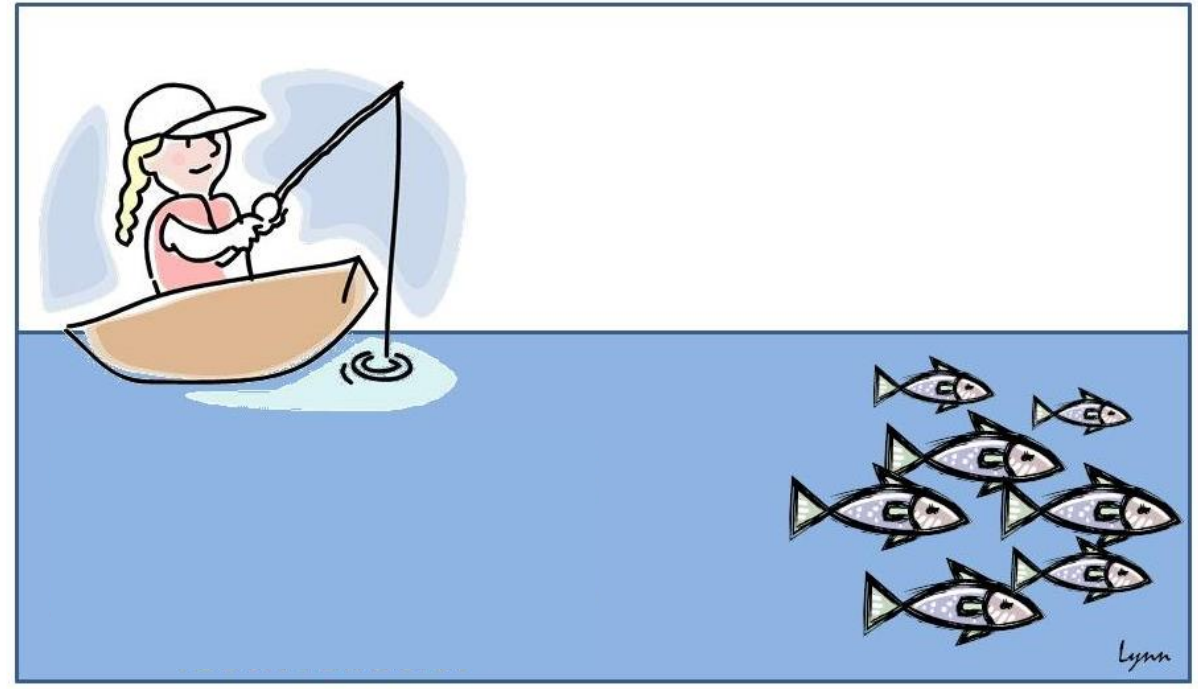
The consideration of land use, population density, and road classifications

## Supportive land use

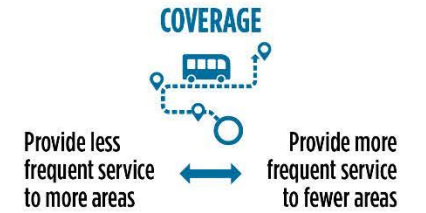
- Zoning districts to guide allocation
  - Prioritize high-density residential; Central business districts, medical districts & shopping centers
- Colleges, Universities, High Schools
- Employers of significance (i.e. State Capitol)

## Supportive infrastructure

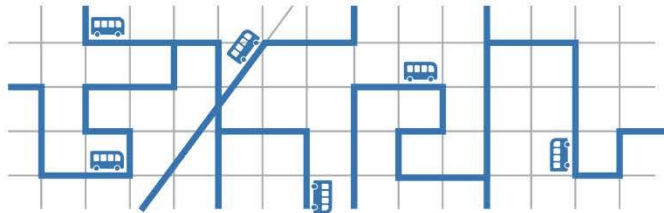
- Arterials & Major Collectors
  - Integration with bike/pedestrian amenities
  - Avoid local access roadways (i.e. neighborhoods)
- Pursue directness and reliability
  - Avoid *circuitous* deviations and large one-way loops



# PRODUCTIVITY VS. COVERAGE TRADEOFF



## COVERAGE

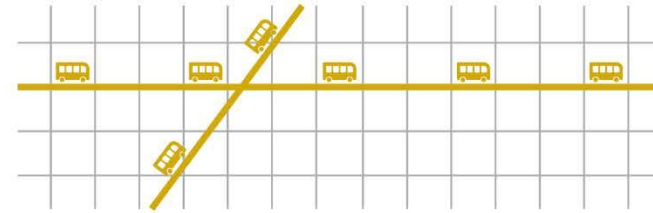


More people have **some** transit access

Ridership is **lower**...

... but really **important** for those who use it

## FREQUENCY



More **trips** on transit!

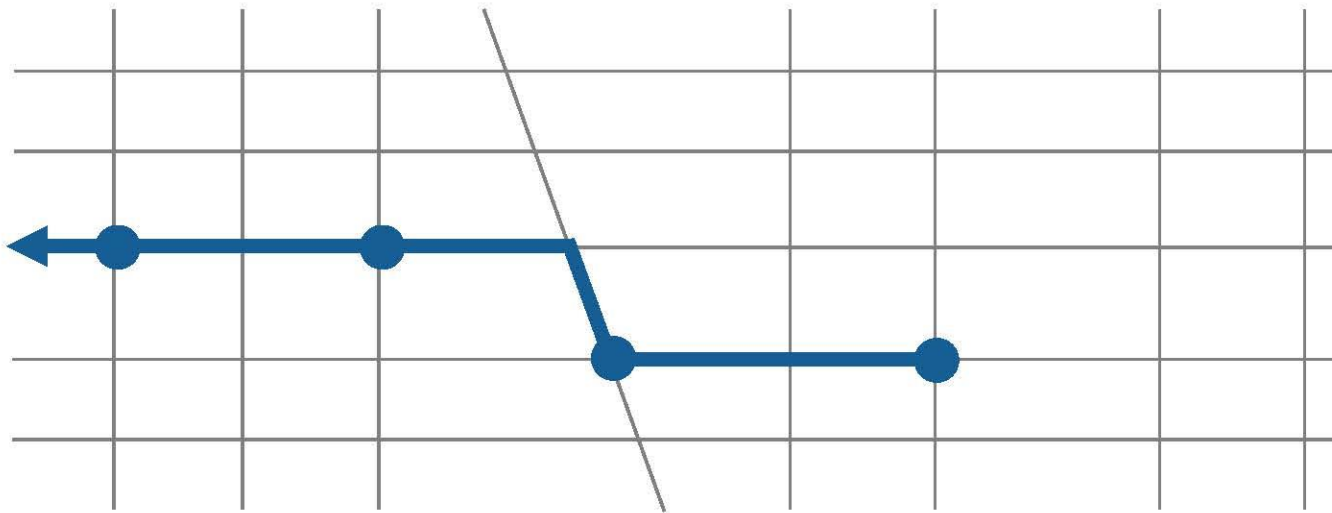
Ridership is **higher**...

... but **no service** in many places



# THE EVOLUTION OF A BUS ROUTE

*In the beginning, there was a well designed route that was direct, had well spaced stops, and performed well...*



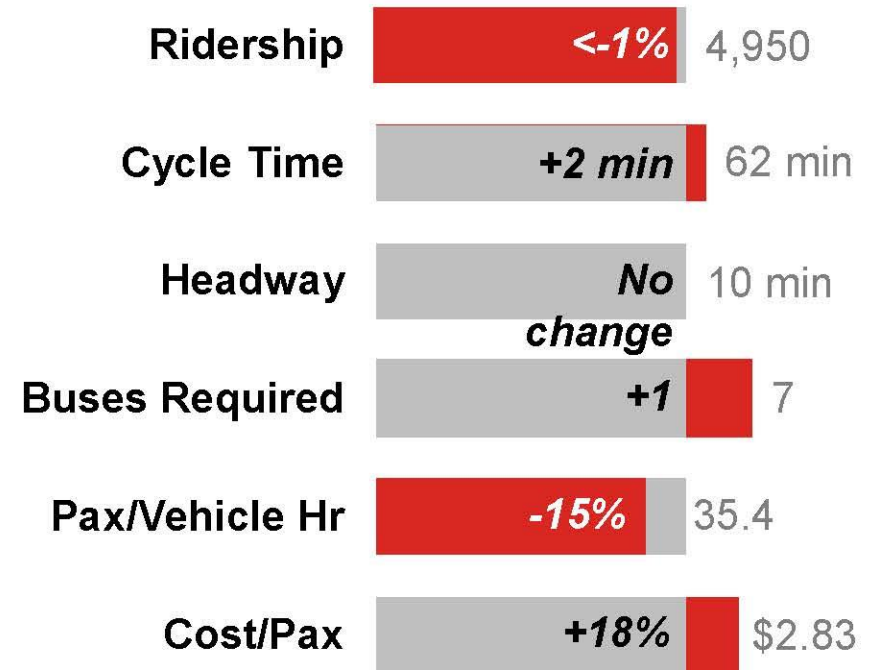
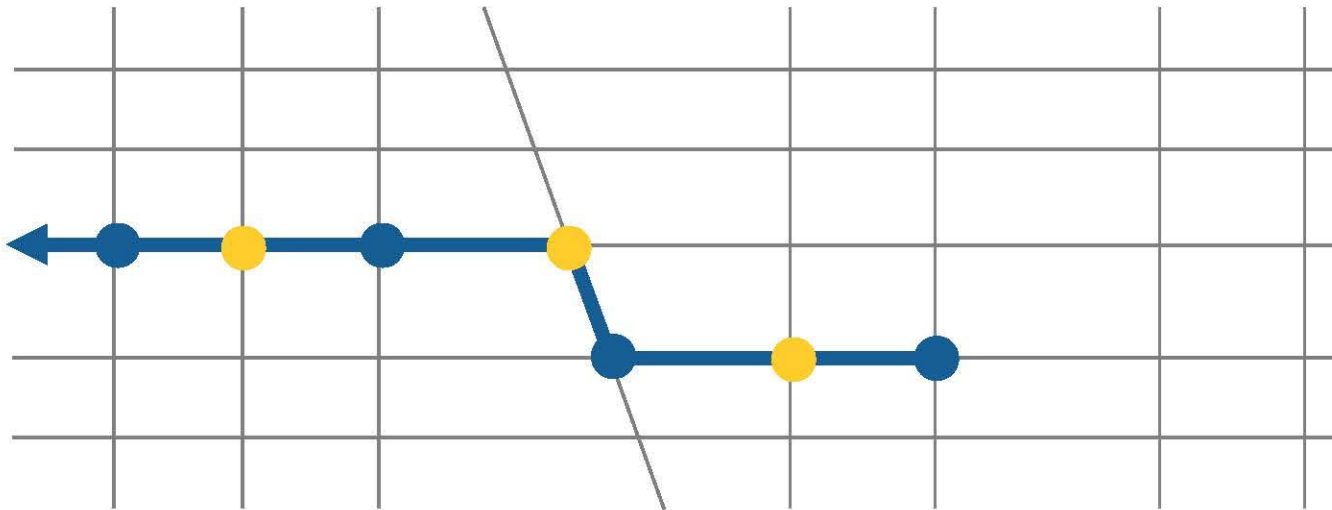
<b>Ridership</b>		5,000
<b>Cycle Time</b>		60 min
<b>Headway</b>		10 min
<b>Buses Required</b>		6
<b>Pax/Vehicle Hr</b>		41.7
<b>Cost/Pax</b>		\$2.40

Source:  
Nelson/Nygaard Consulting Services



# THE EVOLUTION OF A BUS ROUTE

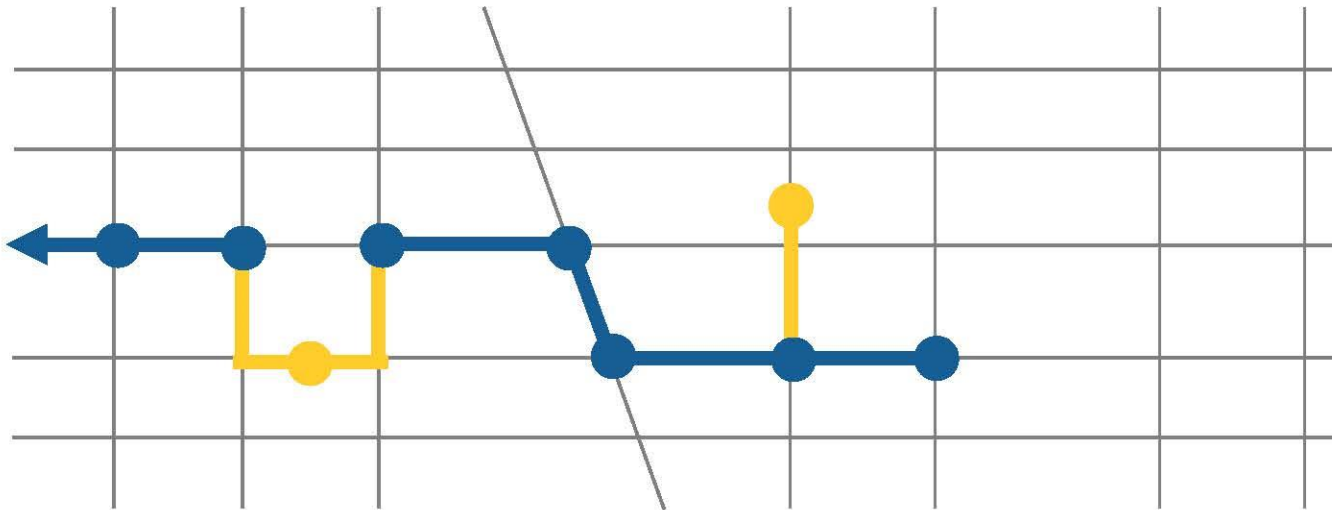
*Over time, some passengers asked that stops be added so that they didn't have to walk as far. The transit agency, being responsive, added them.*



Source:  
Nelson/Nygaard Consulting Services

# THE EVOLUTION OF A BUS ROUTE

*Then, two new apartment complexes opened near the route. So that residents didn't have to walk to the bus, the bus went to them.*



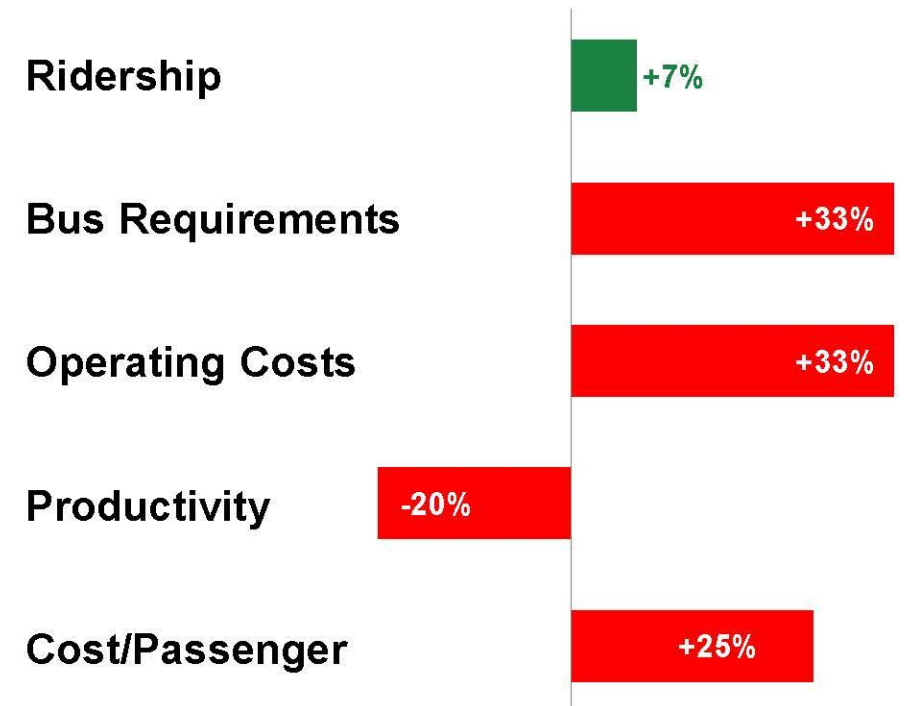
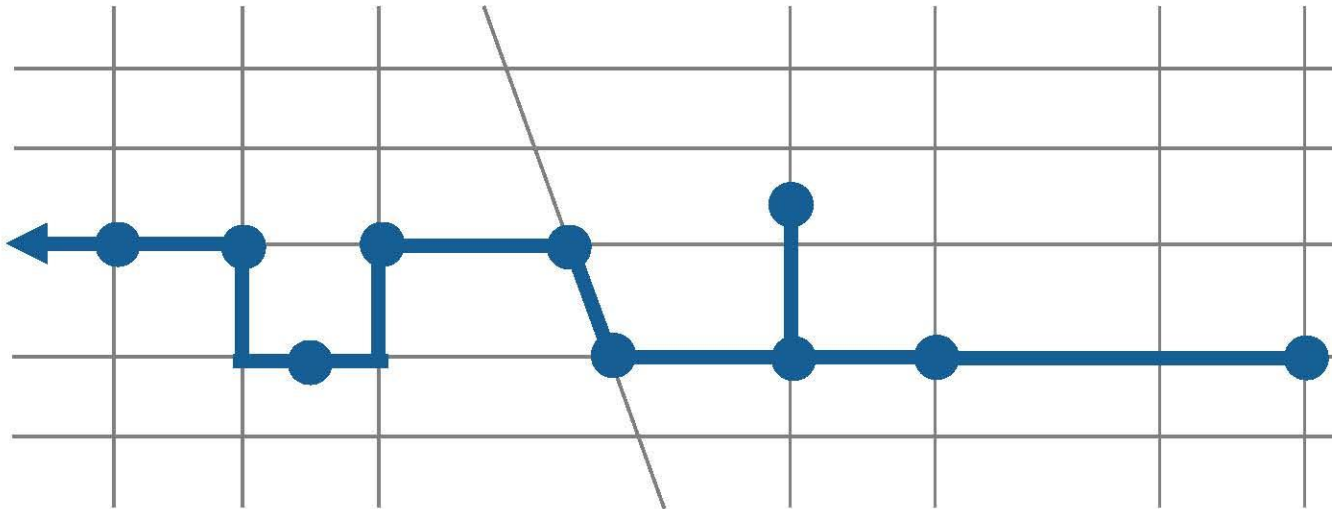
Ridership	-2%	4,850
Cycle Time	+6 min	66 min
Headway	No change	10 min
Buses Required	+1	7
Pax/Vehicle Hr	-17%	34.6
Cost/Pax	+17%	\$2.89

Source:  
Nelson/Nygaard Consulting Services



## THE EVOLUTION OF A BUS ROUTE – LESSONS LEARNED

***Good-intentioned small changes can degrade service and ultimately increase the cost of service***



Source:  
Nelson/Nygaard Consulting Services

# Operability

*Getting to those  
hard-to-reach places*

## Operability:

*Arguably the most  
significant influence on  
Fixed Route Design*

### Considerations

- Turning Around
- School Zones
- Pedestrian Access
- Lighting
- Reliability (60+ time/day)
- Traffic Control
- Uncontrolled intersections
- Roundabouts
- Private Roads
- On-street parking



# *“When will they ever add a stop to my neighborhood?”*

Considerations regarding route designs and bus stop placement



# In the End

## We Plan amid a Harmony of Considerations

### Resource Considerations

Operating Costs; Span & Frequency  
Labor/Fleet/Facility requirements

### Community Considerations

Regional Plans; corridor strategies; public investment partnerships  
Population density and roadways to support transit

### Passenger Considerations

Accessibility: sidewalks, bike lanes, shoulders, lighting; first & last mile  
Demographic Equity  
Availability, Proximity, and Connectivity  
Dial-A-Lift implications: New eligible areas?

### Operational Considerations

Reliability, limitations, access, safety



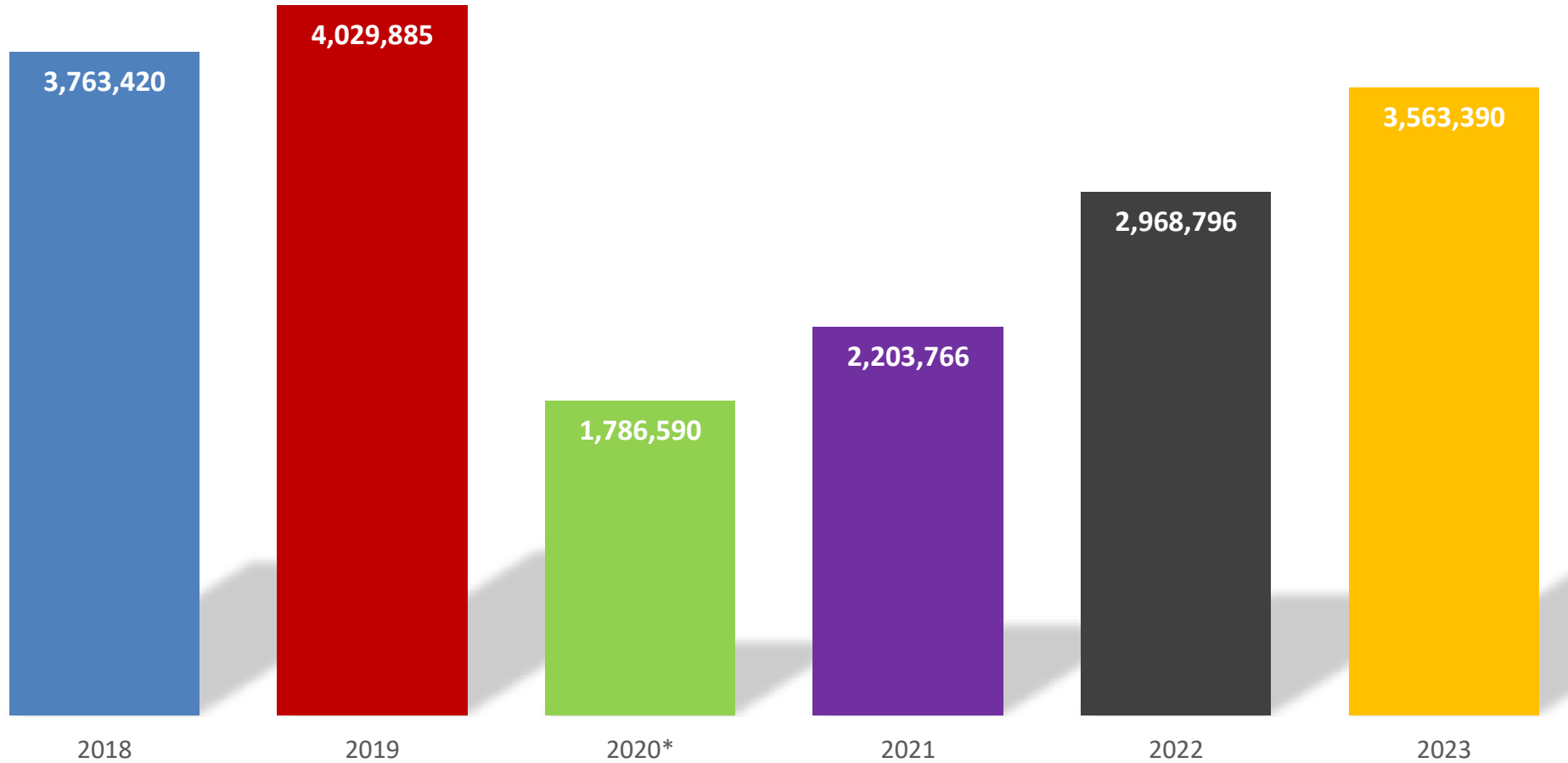
# Ridership Update

## ~~Questions?~~

Rob LaFontaine, Planning Deputy Director  
Peter Stackpole, Development Director  
Emily Bergkamp, General Manager

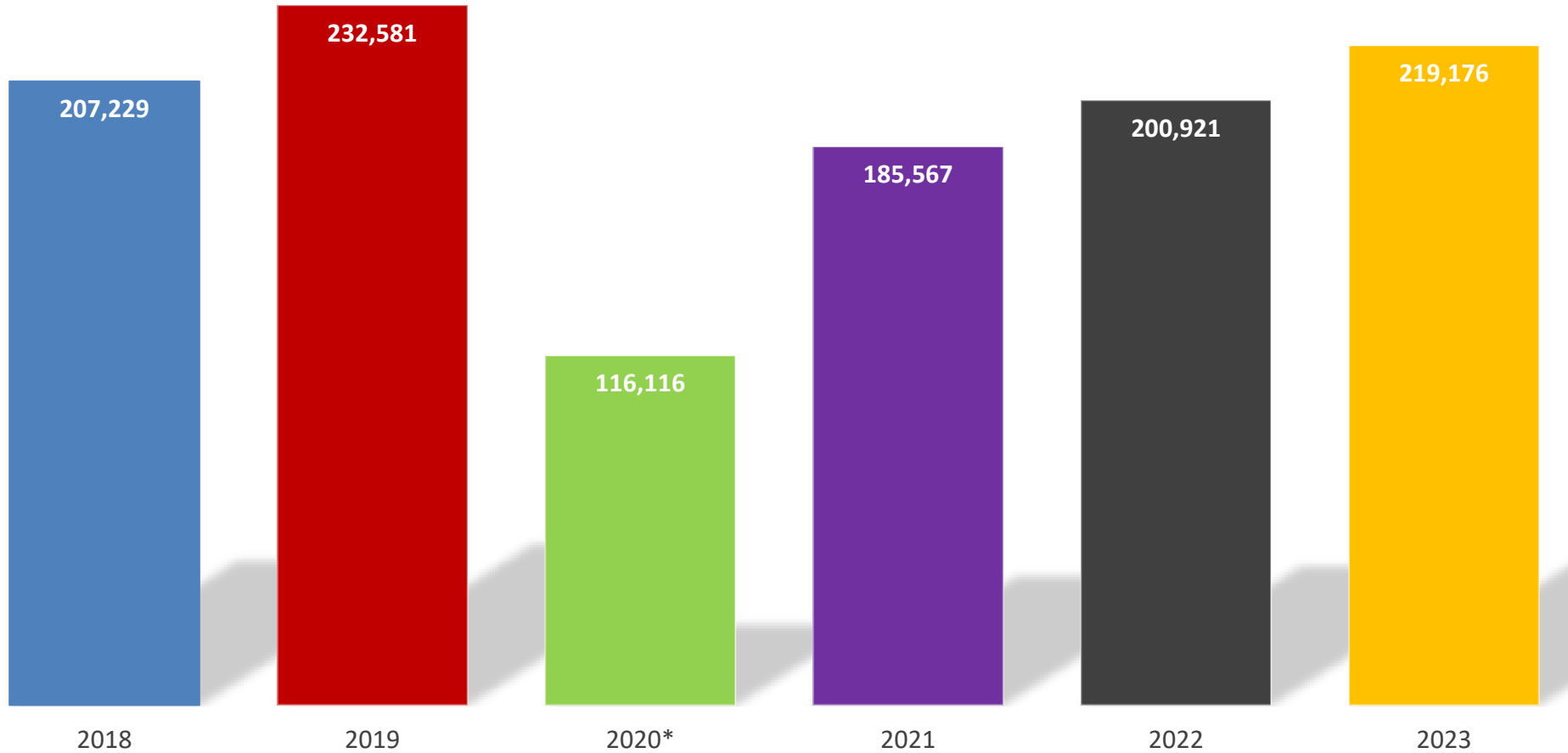


# Annual Fixed-Route Ridership

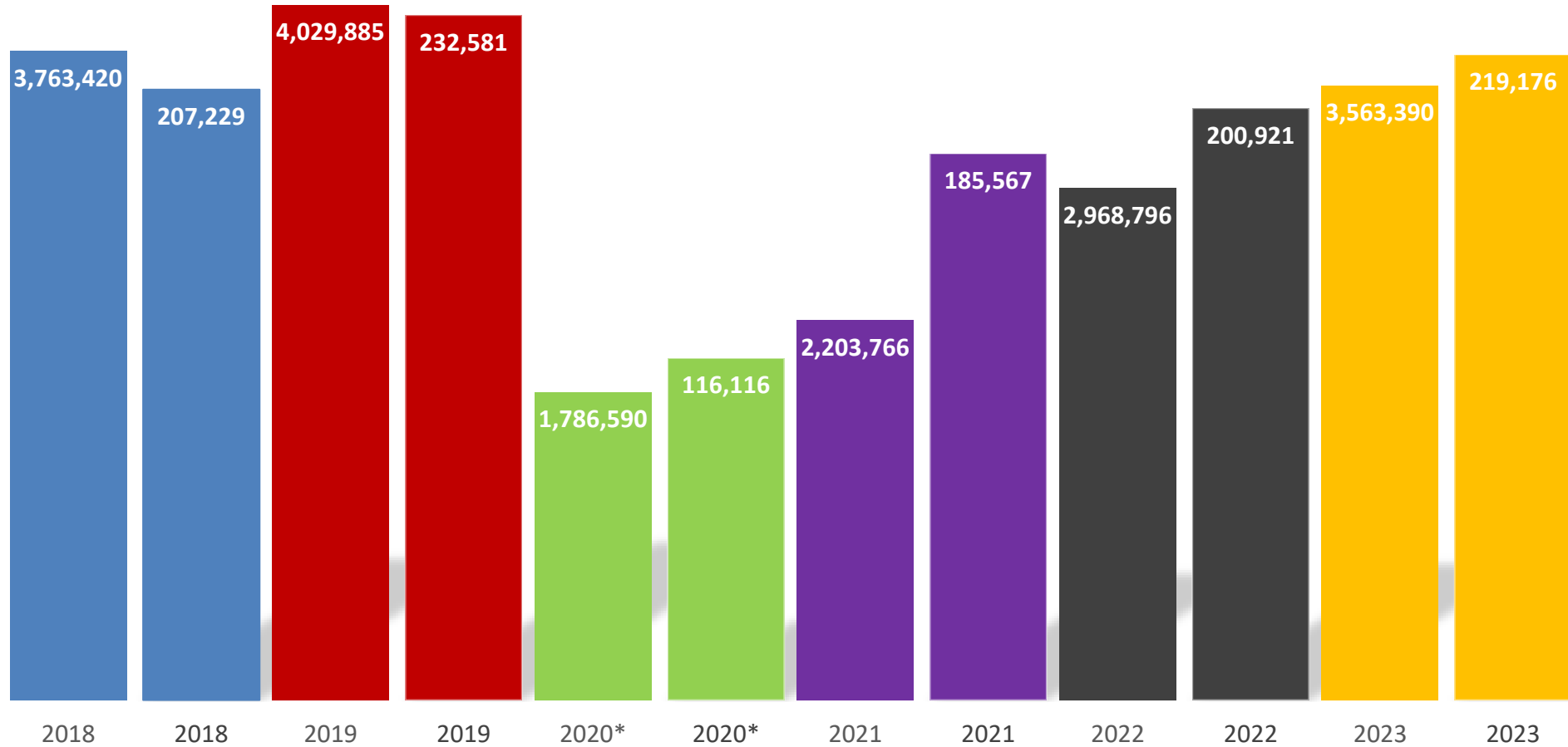




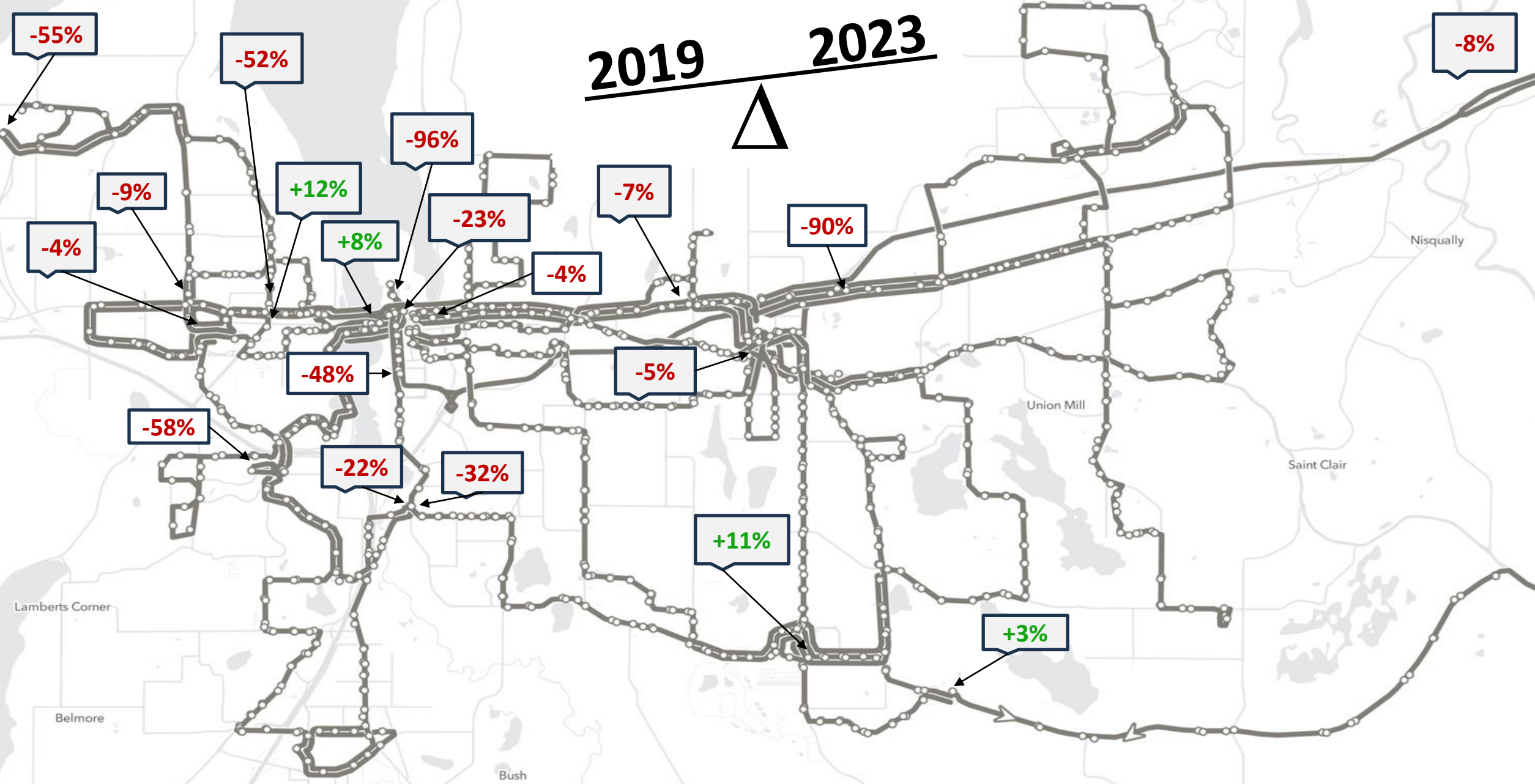
# Annual Fixed-Route Revenue Hours



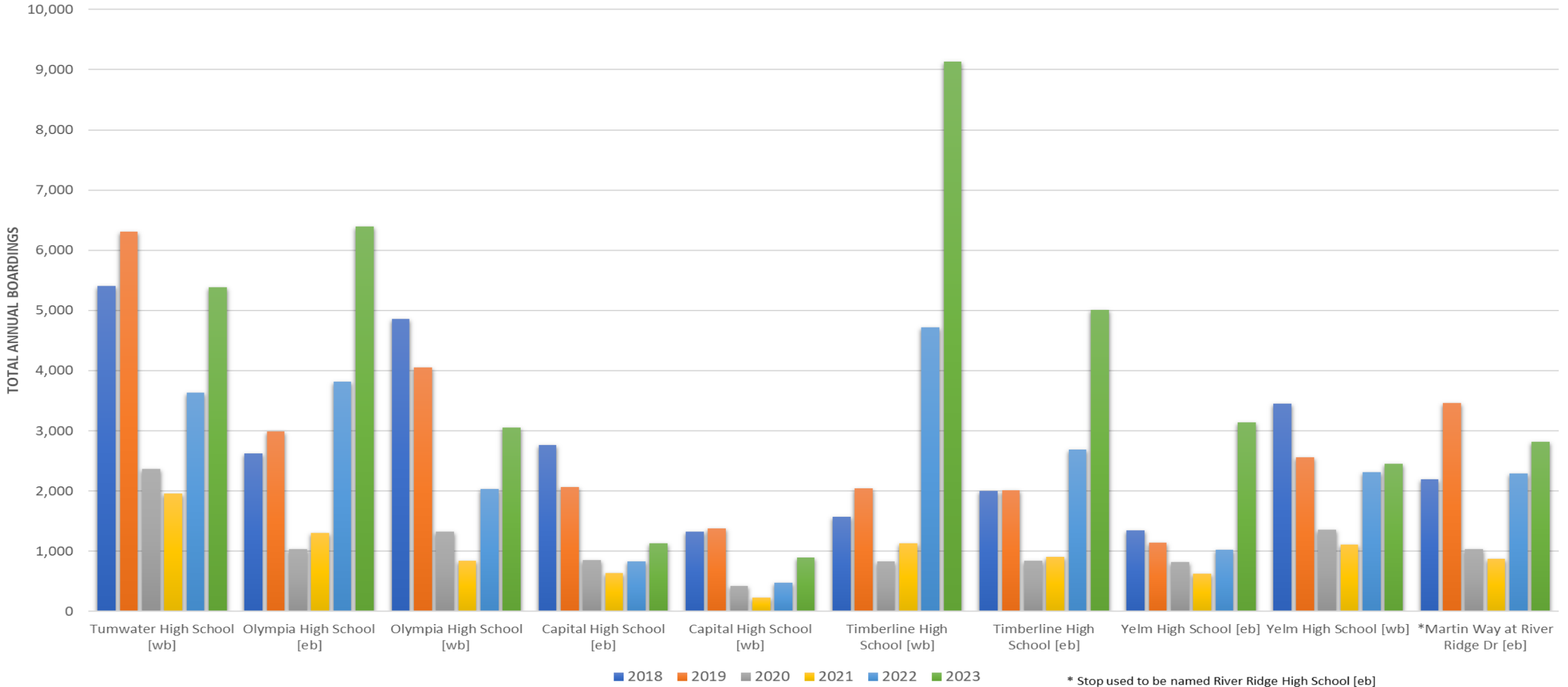
# Annual Ridership AND Annual Revenue Hours



# 2019 2023



# High School Ridership 2018 - 2023





# Questions?

Rob LaFontaine, Planning Deputy Director  
Peter Stackpole, Development Director  
Emily Bergkamp, General Manager

