



Transit Planning and Implications for Future Intercity Transit Service Implementation

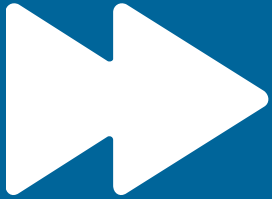
Presented by: Thomas Wittmann

September 18, 2019

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NYGAARD

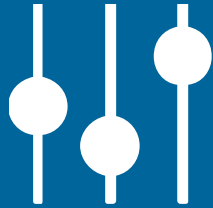
PRESENTATION OVERVIEW

The How and Why of Transit



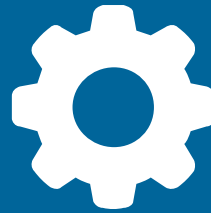
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Introduction



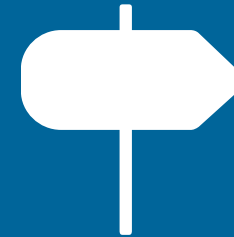
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**Tradeoffs in
Transit
Planning**



3

**Considerations
in Transit
Planning**



4

**Long Range
Plan**



5

**Considerations
for Intercity
Transit**



Introduction

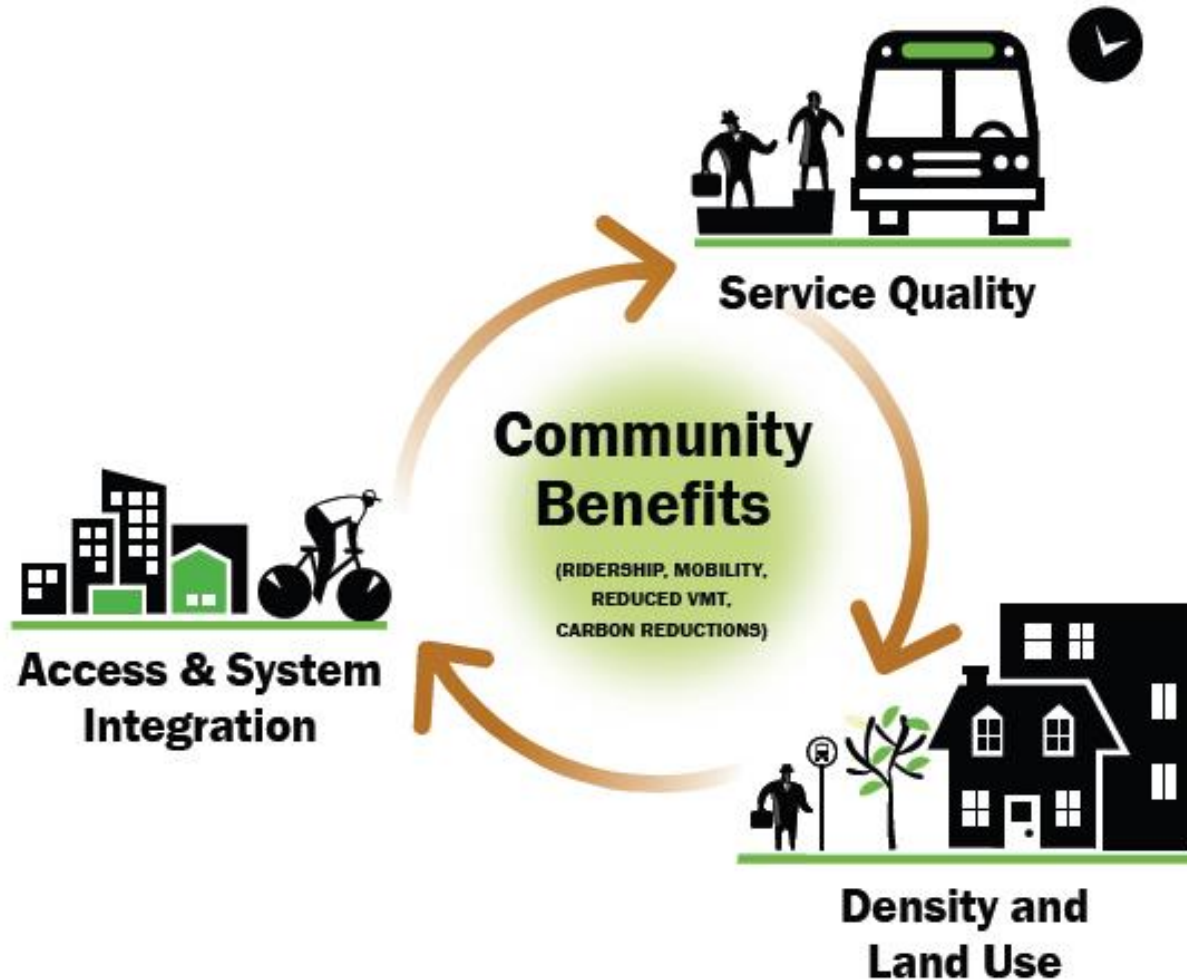
TRANSIT PLANNING CONSIDERATIONS

- What makes transit successful?
- How does service design relate to community goals and needs?
- What may constrain service design or level of service?
















DELIVERING COMMUNITY BENEFITS

Coordinated Investment



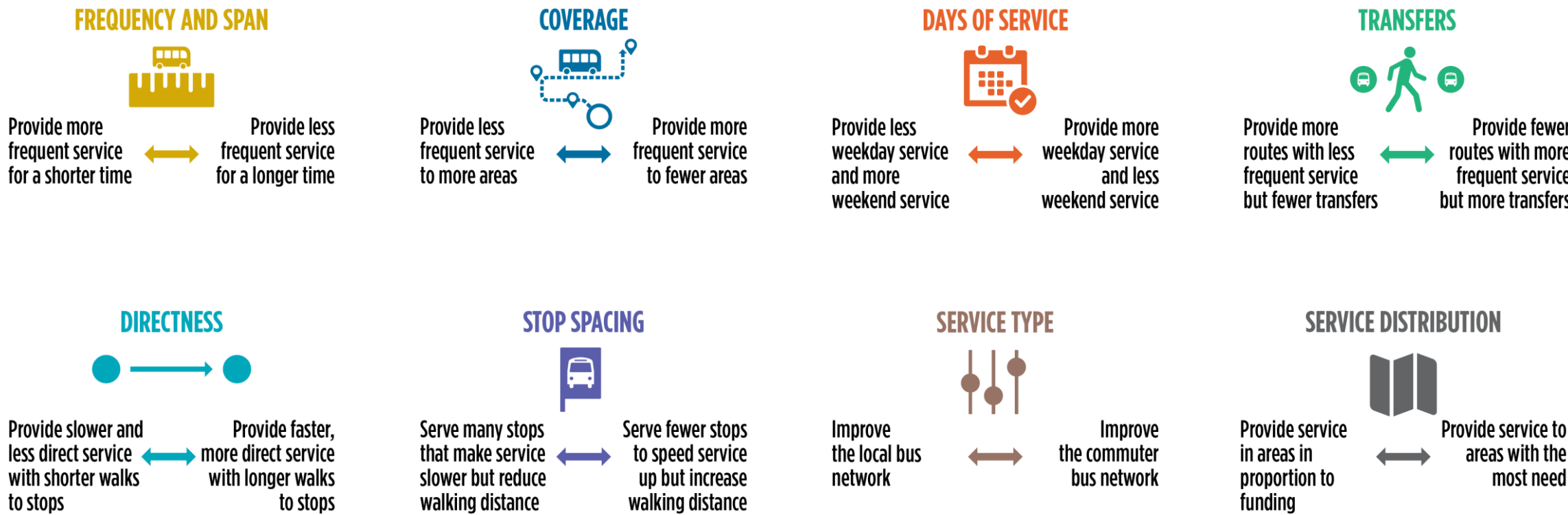
MAKING THE CHOICE TO USE TRANSIT

How can service strive to reflect customer values?		Coverage	Connectivity	Frequency & Span	Speed	Fares	Amenities & Cleanliness	Reliability
								
	Where I need to go	✓	✓					✓
	When I need to go		✓	✓				✓
	My time is valued		✓	✓	✓		✓	✓
	Value for my money					✓	✓	✓
	Getting there safely and comfortably						✓	✓
	With flexibility to change	✓		✓				✓



Tradeoffs in Transit Planning

WHAT ARE THE REGION'S VALUES?



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

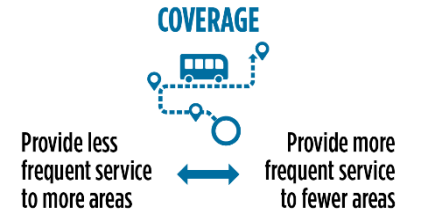
- Job market has expanded beyond standard 9 to 5 times
- Discretionary / non-work related trips are most often during non-peak times
- Longer span of service allows for more trip types to be served

Imagine if ...

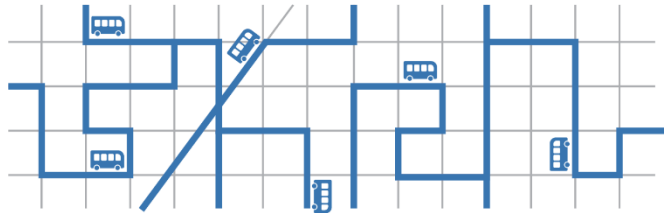


You showed up for work, but the elevator
only operated between 6 to 9 a.m.
and 3 to 6 p.m.

PRODUCTIVITY VS. COVERAGE TRADEOFF



COVERAGE

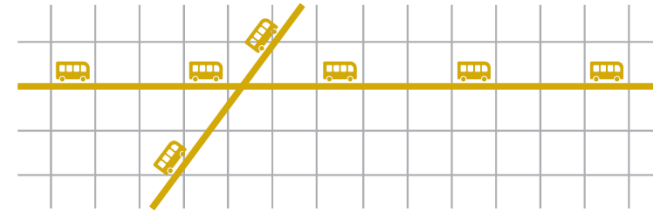


More people have **some** transit access

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

IMPORTANCE OF OPERATING MORE DAYS OF THE WEEK



Seven Day Focus

■ Positives

- Growing service industry job types are served
- Ability to live without a car is enhanced
- Mobility for people who rely on transit improves

■ Drawbacks

- Weekend service carries fewer people

Weekday Focus

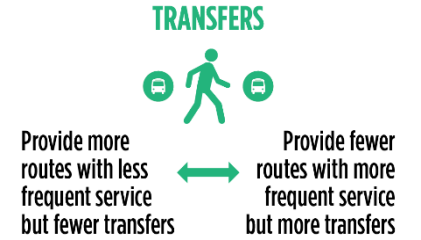
■ Positives

- Resources put where it carries the most passengers

■ Drawbacks

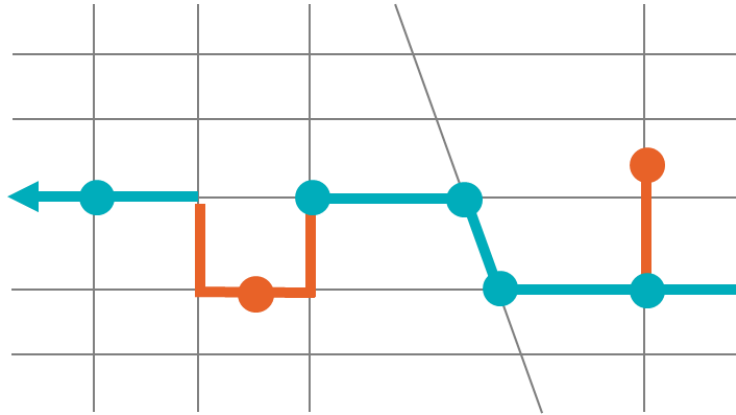
- Job access and overall mobility for unserved areas is diminished

IMPORTANCE OF TRANSFERS

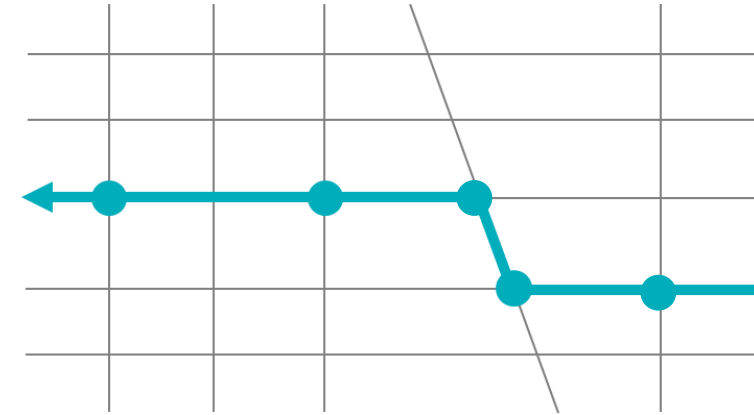


- Most trips within a metropolitan area cannot be served with a one seat ride
- Is it more important to try to serve trip patterns without transfers?
- **Considerations**
 - Customers tend to dislike transfers
 - Frequent service and good connections can reduce these perceptions
 - Greater emphasis on one-seat rides can lead to less frequent and lower utilized routes
 - Where is the balance?

IMPORTANCE OF ROUTE DIRECTNESS



OR



DIRECTNESS



Provide slower and less direct service with shorter walks to stops

**Provide faster,
more direct service
with longer walks
to stops**

- **Positives**
 - Shorter walks for percentage of riders
- **Drawbacks**
 - Slower travel times for most riders
 - Higher operating costs

- **Positives**
 - Faster travel times for most riders
 - Lower cost
- **Drawbacks**
 - Some people have to walk farther

IMPACT OF STOP SPACING ON SPEED

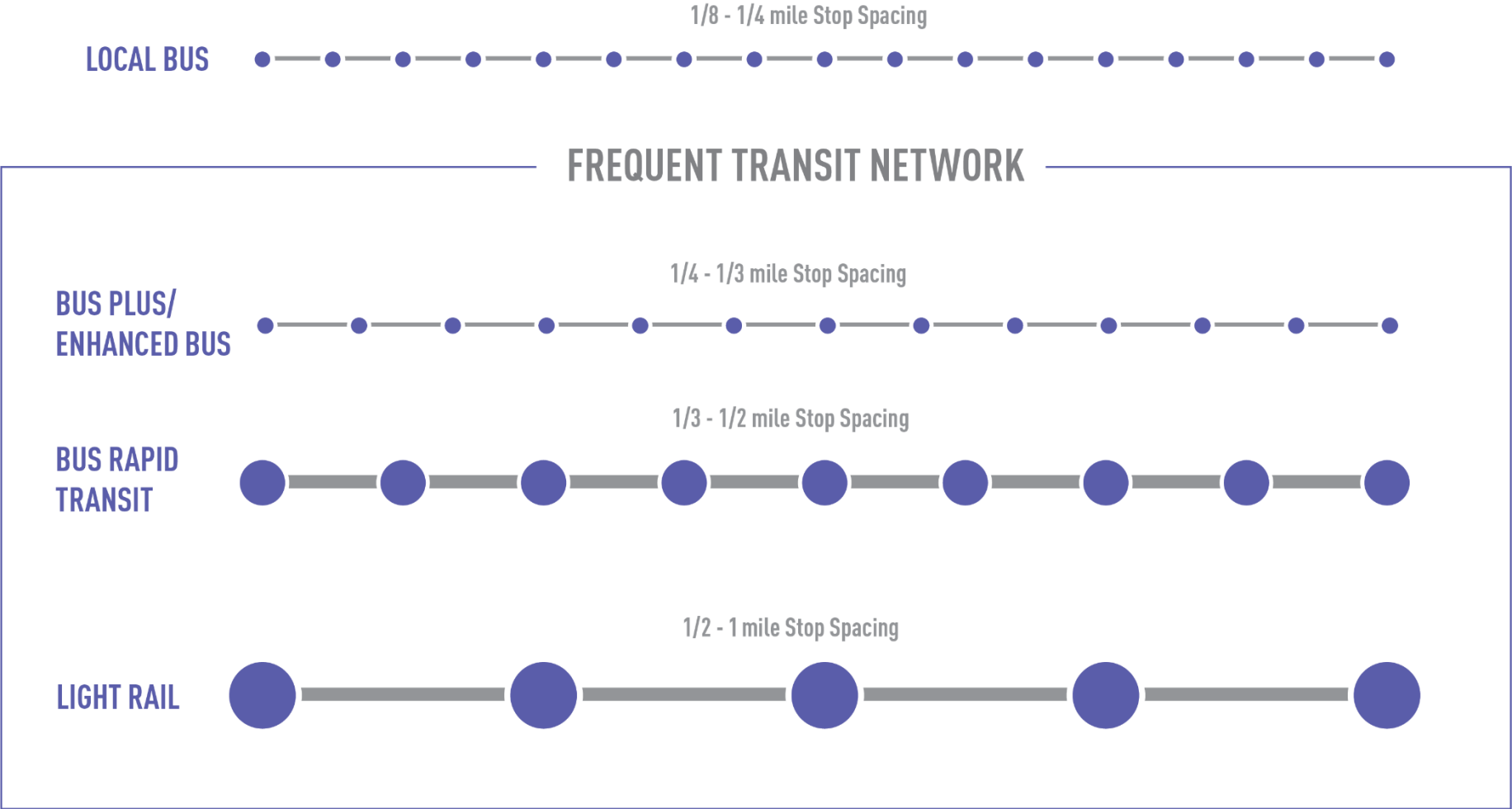
STOP SPACING



Serve many stops
that make service
slower but reduce
walking distance



Serve fewer stops
to speed service
up but increase
walking distance



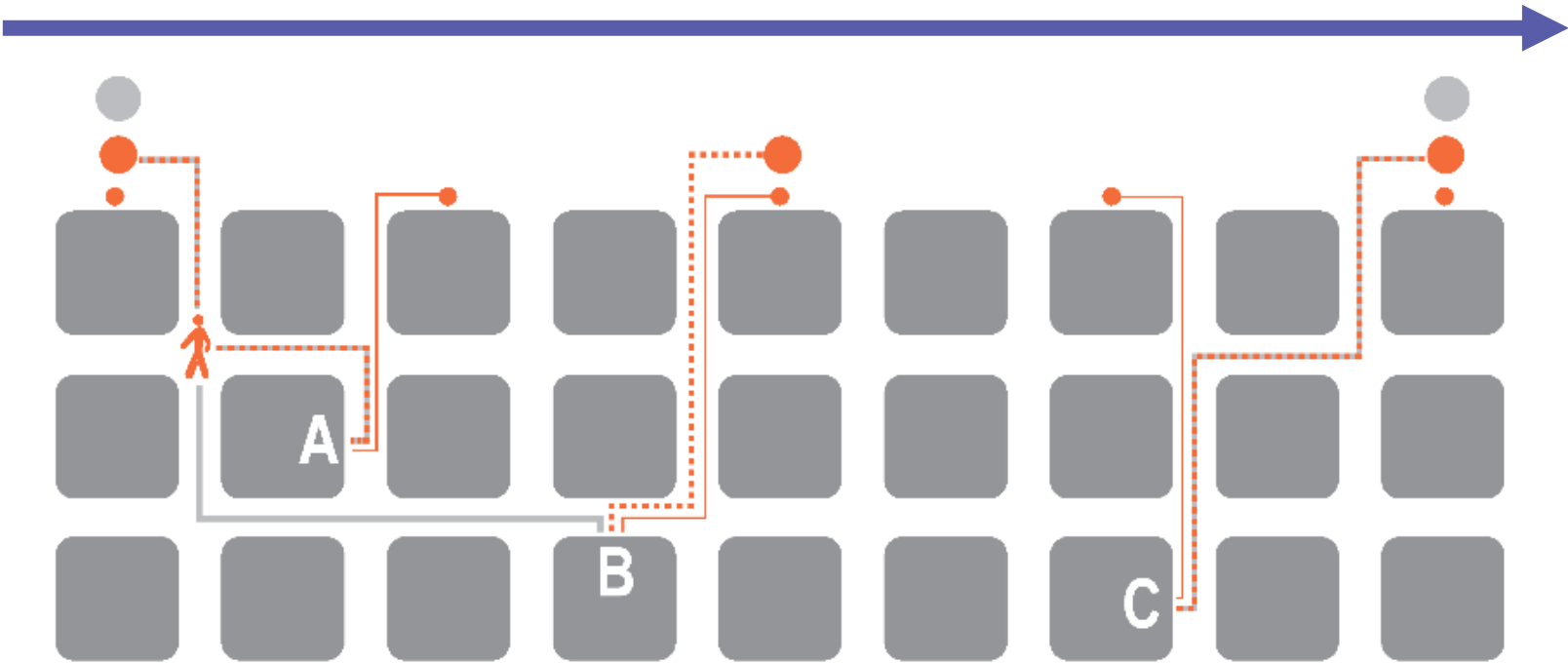
FASTER SERVICE BUT SOME LONGER WALKS?

STOP SPACING



Serve many stops
that make service
slower but reduce
walking distance

Serve fewer stops
to speed service
up but increase
walking distance



Blocks Traveled by Service Provided

	1/8 mi. Service	BRT 1/4 mi.	BRT 1/2 mi.
Household A	2 blocks	3 blocks	3 blocks
Household B	3 blocks	3 blocks	5 blocks
Household C	3 blocks	3 blocks	4 blocks

Walking Travel Path to Transit Stop

- BRT Stop (1/2 mile stop spacing) and Path
- BRT Stop (1/4 mile stop spacing) and Path
- 1/8 mi. Service Stop and Path

IMPORTANCE OF SERVICE TYPES



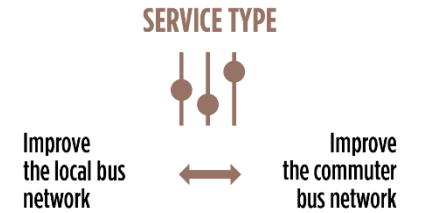
Local Services

- Serves all-day market with many trip purposes
- Higher ridership
- Lower operating and capital costs



Commuter Services

- Takes people off the road at most congested times
- Attracts downtown employee market
- High operating cost
- High capital cost due to need for park-and-rides





Considerations in Transit Planning

COORDINATING LAND USE AND TRANSPORTATION

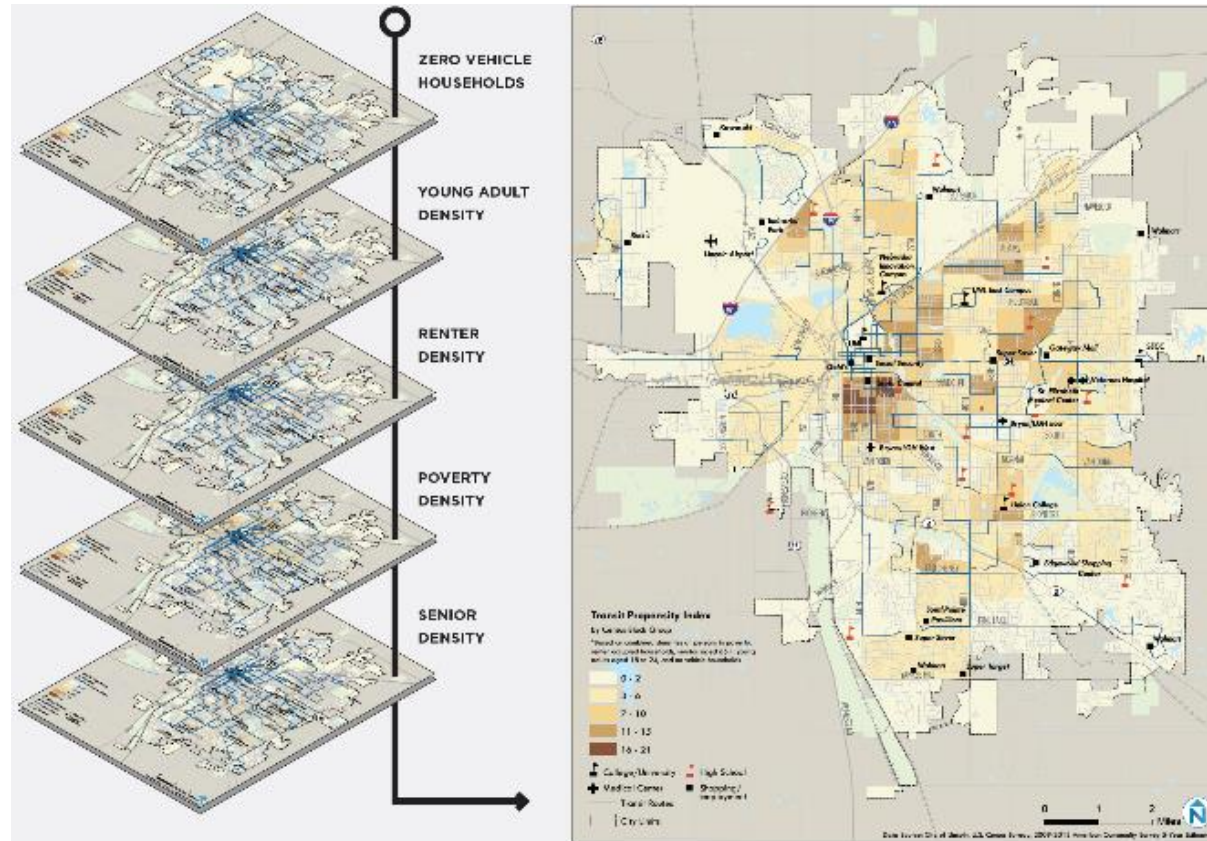
- Classic “chicken-and-egg” problem:
 - Transit quality is a key criterion for land use development
 - Yet land use is also a key criterion for transit service performance
- Ideally, quality transit will be available when land use and street design use good transit-oriented forms
- Tools:
 - Frequent Transit Networks/Lines
 - Community based services to feed frequent network
 - Transit priority in the roadway

SOME POPULATIONS ARE MORE LIKELY TO USE TRANSIT

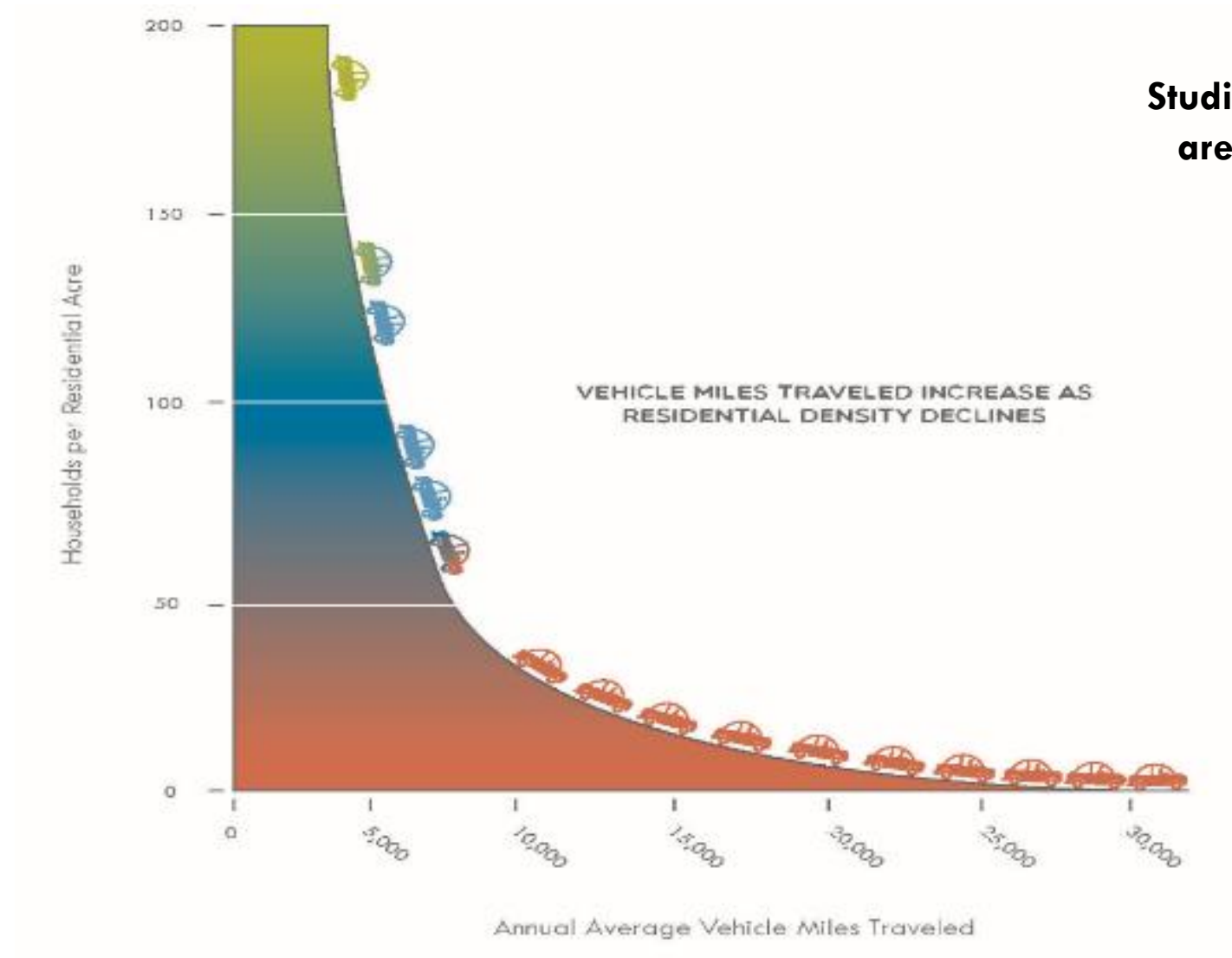
Groups More Likely to Rely on Public Transportation

■ Examples

- Zero/Low Vehicle
- Poverty
- Renters
- Young adults



DENSITY IS A PRIME DETERMINANT OF RIDERSHIP



Studies show that households in higher density areas make 25% less auto trips on average

EMERGING MOBILITY

**Transportation
Network
Companies (Uber,
Lyft, etc.)**



Microtransit



**Autonomous
Shuttles**



TRANSIT IS ESSENTIAL TO MOVE PEOPLE EFFICIENTLY

40 People in...

Transit



Cars



Electric Cars



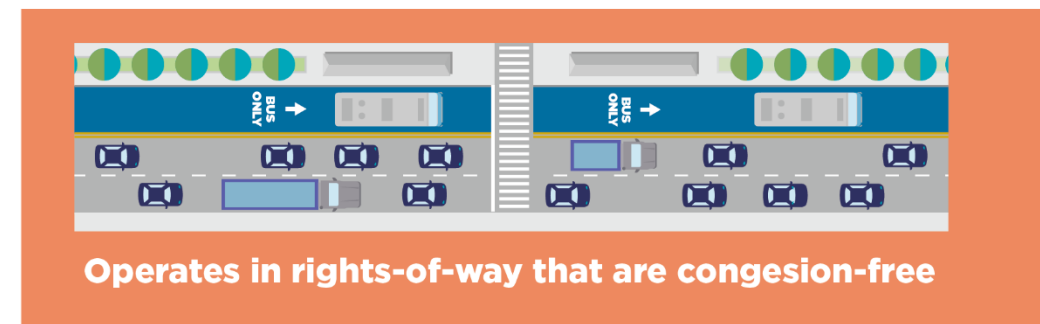
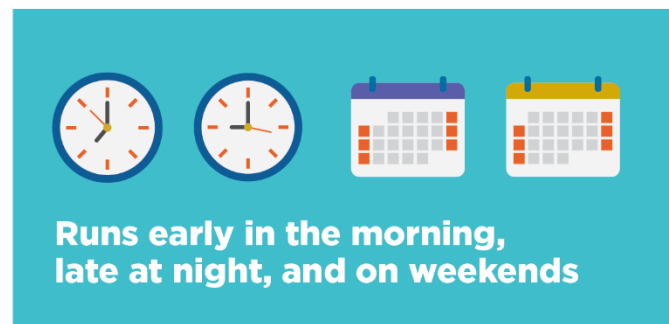
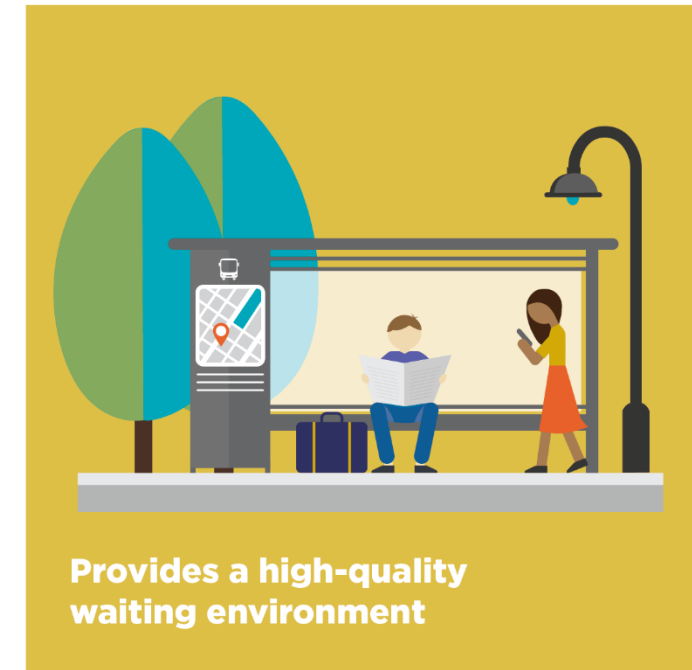
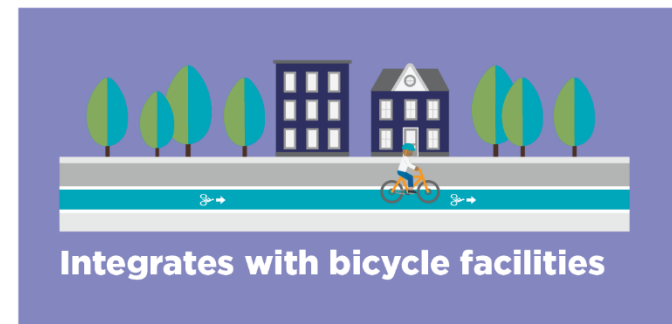
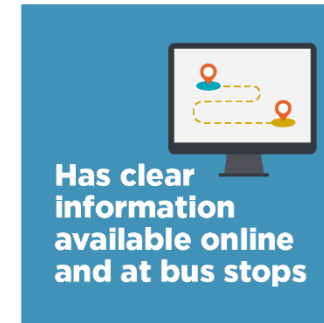
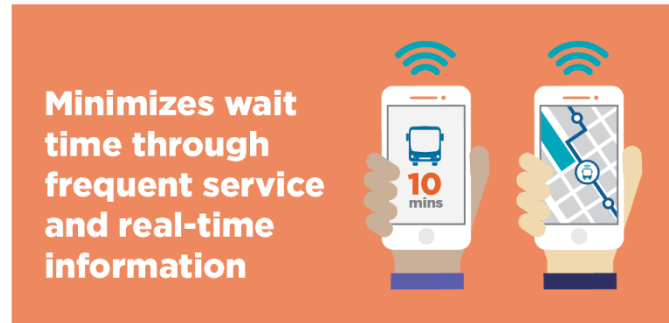
Self Driving Cars



GUIDELINES FOR SERVICE



High-Quality Transit Service ...





The Long Range Plan

BUS RAPID TRANSIT

Bus Rapid Transit (BRT) is a high-frequency bus-based transit system that delivers fast, direct, comfortable, and cost-effective service.

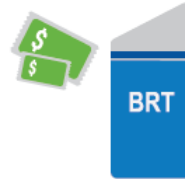
Because BRT contains features similar to rail service. It is much faster, more reliable, and more convenient than regular bus services. With the right features, BRT avoids the causes of delays that typically slow regular bus services, like being stuck in traffic and paying on board.



*Smarter
traffic signals*



*A distinct
look and feel*



*Simpler
fare payment*



*Vehicles with
more room*



*Comfortable
stations*

What are the benefits?

- ✓ Faster service that arrives on time
- 🕒 Buses that come more often, all day long
- 🏠 Service that supports economic development

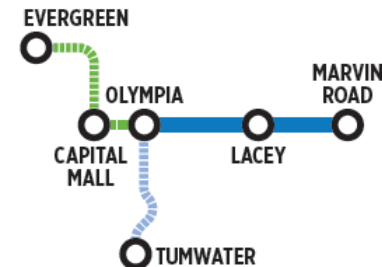
What are the costs?

Martin Way corridor:

⚙️ **\$2.5M**
Annual operating costs (additional)

🏗️ **\$23M–\$30M**
Capital costs

Where are the opportunities?



EXTENDED SPAN OF SERVICE

An extended span of service means more bus routes start earlier in the morning and continue to run later at night, on weekdays and weekends.

As a result, extended service helps get you where you need to go, regardless of your schedule. This helps to accommodate early or late work schedules, as well as shopping, visiting friends, or going out at night.

4    

Number of bus routes that currently run until 11 PM on weekdays

15               

Number of bus routes that would run until 11 PM with an extended span

What are the benefits?



Support for irregular and late work schedules



Span is consistent for multiple routes



Later service is a community priority

What are the costs?



\$1.6M

Annual operating costs (additional)



7%

Increase in service relative to 2017 levels



None

Capital costs

Where are the opportunities?

Routes that run until 11 PM now:

12 41 62B 66

Routes that would run until 11 PM with an extended span of service:

13 21 45 47
48 60 62A 64
67 68 94

IMPROVED FREQUENCY

Improved frequency means buses come more often, all day. In other words, buses arrive at a stop every 15 or 30 minutes depending on the route.

When buses come more frequently, you don't need to plan your day around the schedule. For the most frequent routes (13, 41, 62A/B), buses would come every 15 minutes, seven days a week.



Minimum 30-minute frequency all day



Three routes with all-day, 15-minute service



Same frequency all-day, seven-days-a-week



Simpler bus schedules

What are the benefits?



Better accommodates your schedule



More flexibility for off-peak trips



Bus schedules that are easier to remember

What are the costs?



\$4.5M

Annual operating costs (additional)



21%

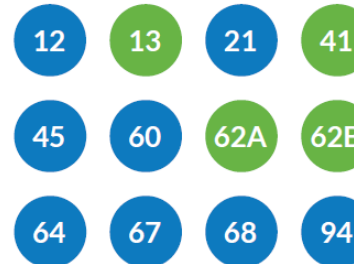
Increase in service



2

New vehicles required

Which routes would have more frequent service?



● 15-min all day

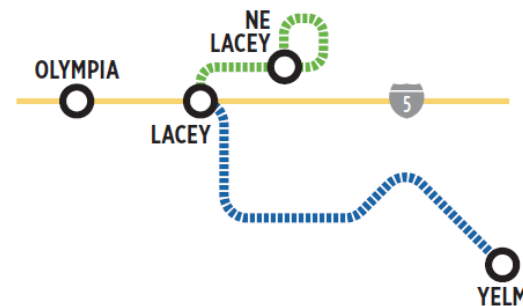
● 30-min all day

SERVICE TO NEW AREAS

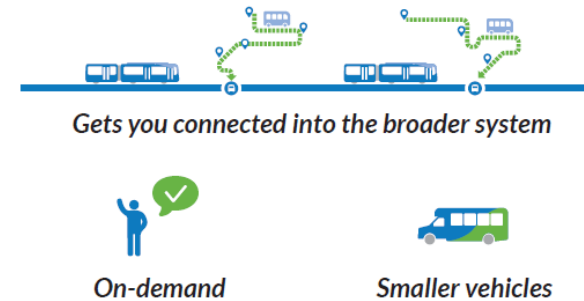
Service to new areas would include routes to NE Lacey, Yelm, and possibly Innovative Service Zones for other less densely populated areas.

Growth in Thurston County is adding new destinations that are unserved by the current transit network. For NE Lacey, new service would be an all-day, standalone route between the Lacey Transit Center and job centers in NE Lacey. Service to Yelm would be an express route during rush hour to and from Lacey Transit Center. Innovative Service Zones could serve less densely populated areas until they can support bus service. Potential zones could be in Lacey, Olympia, Tumwater, and Yelm.

Potential NE Lacey and Yelm route alignments



What is an Innovative Service Zone?



What are the benefits?

- ✓ Better access to jobs, schools, appointments, and shopping
- 🛒 More flexibility for off-peak trips

What are the costs?

- ⚙️ **\$2.6M** Annual operating costs (additional)
- 🚌 **4** New vehicles required

NIGHT OWL SERVICE

Night Owl Service is a weekend, on-demand, late night service to and from downtown Olympia.

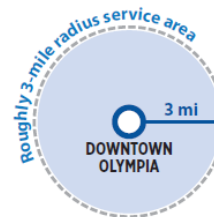
It would include three small buses leaving the Olympia Transit Center hourly. Each bus would make pickups and drop-offs in a different zone that reaches up to three miles away from downtown Olympia. Night Owl service would not replace the existing weekend service to The Evergreen State College.



On-demand



Weekend nights



Three-mile radius



*Maintains
late night service*

What are the benefits?



Supports new trip purposes



Provides employment transportation during peak "entertainment" times



Promotes safety for riders and non-riders

What are the costs?



\$400,000

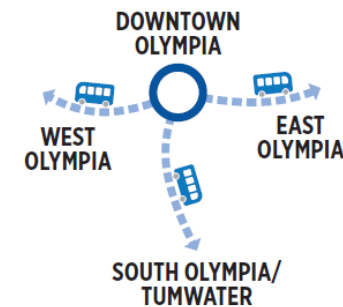
Annual operating costs (additional)



None

Capital costs

Where are the opportunities?



MAINTAIN ON-TIME PERFORMANCE

It's critical to keep buses running on time despite changes in traffic. This requires setting aside 0.5% of the operating budget to periodically adjust schedules.

Increasing traffic congestion in the future will lead to increasing delays, and increasing costs associated with those delays, for everyone including transit vehicles.

Intercity Transit can plan ahead for slowing travel times by setting aside a specified percentage of the operating budget each year for one-or-two schedule adjustments. This would allow Intercity Transit to put additional buses into service on busy routes and reduce wait times for riders.



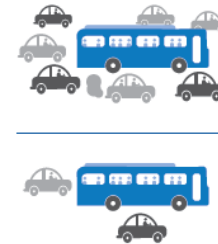
Allocates 0.5% of operating budget



Adjusts schedules periodically



Keeps buses on time



Accommodates changing traffic



Plans ahead

What are the benefits?



Establishes a savings account for on-demand service additions



Provides flexibility for changing operating conditions

What are the costs?



0.5%

Annual operating costs



None

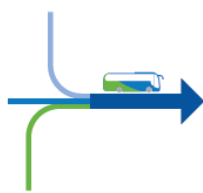
Capital costs

ENHANCED COMMUTER SERVICE

Enhanced commuter service means better express service between Olympia, Lacey, Lakewood, and Tacoma. It would make service easier to understand, faster, more comfortable, and more frequent.

Commuter service is fast service over long distances, designed to transport suburban workers to downtown jobs. This is important because Thurston County anticipates approximately 43,000* commuters traveling out of Thurston County to work by 2025, an increase of 22%. Many of these commuters will be going to Pierce and King Counties.

*Thurston Regional Planning Council (TRPC) Countywide Employment and Commute Forecast, January 2018



*Consolidates existing
express routes*



*Increases
service levels*



*Improves speed
and reliability*



*Upgrades to
coach vehicles*

What are the benefits?



Avoids delays.



Provides flexibility for
changing operating conditions



Reduces congestion on I-5

What are the costs?



\$1M

Annual operating costs
(additional)



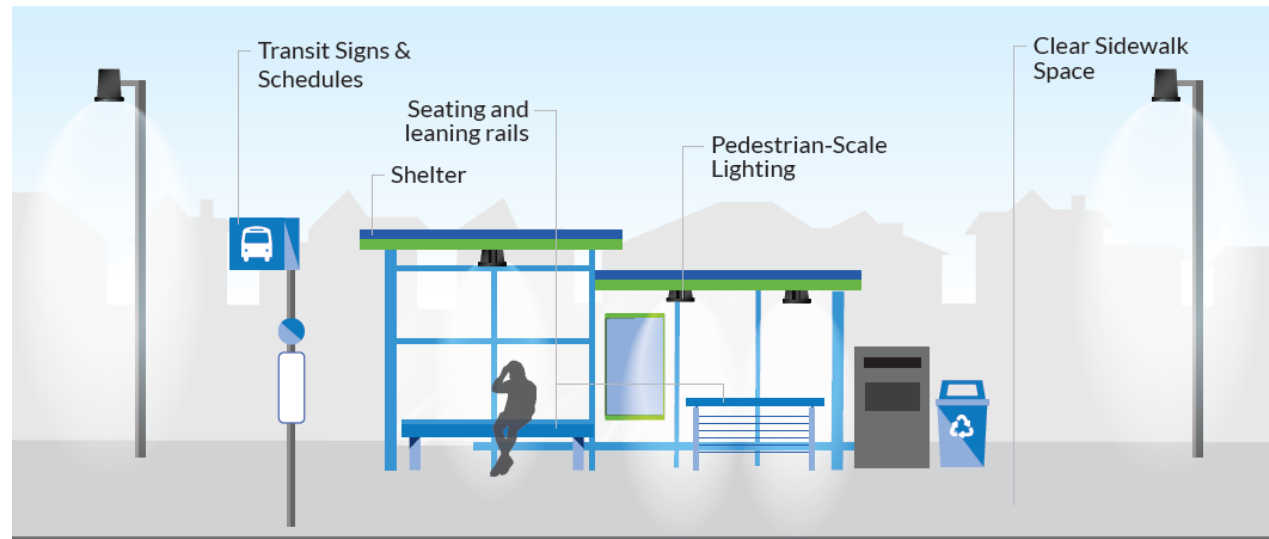
\$3.0M

Capital costs
for new buses

ENHANCED CAPITAL FACILITIES

Enhanced capital facilities mean better bus stops, with features like shelters, benches, and lighting. Together, these improve the overall customer experience while waiting for the bus.

Intercity Transit would invest in bus stop enhancements throughout its service area. Priority would be given to stops with more ridership.



What are the benefits?



Better passenger experience



Attracts and retain riders

What are the costs?



None

Annual operating costs



\$260K

Annual capital costs

CONTINUE INVESTIGATING FARE PAYMENT OPTIONS

Changing the way fares are paid means different things to different people, and can address several challenges identified by the community. There are options and opportunities that, with some additional study, can help meet our shared goals.



***Get where they
are going faster***



***Make it easier
to pay***



***Make it more
affordable***



***Encourage people
to ride the bus***



***Reduce fare hassles
and uncertainty***

Implementing new fare technology and introducing an alternative fare structure are two options which could be considered.

New Fare Technology

The existing fare collection system takes cash only and is failing. There are many new technology options to consider. Part of the consideration is the cost associated with purchasing and maintaining a fare collection system, and processing the money collected.

Alternative Fare Structure

An alternative fare structure means removing the collection of fares on the bus from individual riders and replacing that fare revenue with funds generated through public/private partnerships. About 10% of transit revenues come from fares. There are several communities, like Chapel Hill NC, Missoula MT, Corvallis OR, and Cache Valley UT, that have implemented a similar alternative fare structure. They have found it:



***Promotes
social equity***

Riders least able to afford fares are currently paying them



***Increases
ridership***

Systems report an increase of 30–40% ridership



***Makes bus
service faster***

3–7% speed improvement without fare collection waiting time



***Lowers
operating costs***

eliminates costs for fare collection, fare equipment, ticket management, and administration



***Removes
barriers***

Increases convenience and removes the hassle of finding cash to ride the bus



***Reduces traffic
congestion***

gets more people riding the bus leaving fewer cars on the road



***Environmentally
friendly***

gets more people riding the bus leaving fewer cars on the road

TENTATIVE SERVICE IMPLEMENTATION PLAN

Implementation Year	Improvement
2019	<ul style="list-style-type: none">• Improve span of service• Keep Buses On Time (Schedule Maintenance)
2020	<ul style="list-style-type: none">• Improve Frequency• Expand Bus Service to NE Lacey (post I-5 work)
2021	<ul style="list-style-type: none">• Innovative Service Zone (first zone)• Night Owl Services
2022	<ul style="list-style-type: none">• Express Service to Yelm (post Yelm by-pass)• Enhance Commuter Services (pending HOV lanes)
2023	<ul style="list-style-type: none">• Innovative Service Zone (second zone)
2026	<ul style="list-style-type: none">• Innovative Service Zones (Add third zone)• Bus Rapid Transit

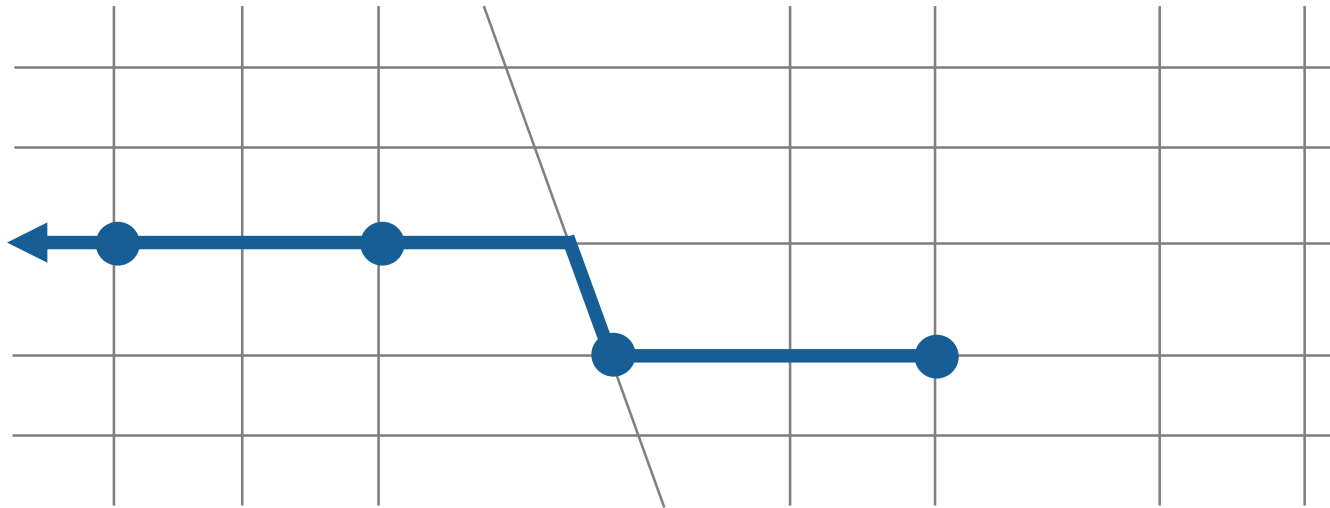








Considerations Moving Forward

RESPONDING TO REQUESTS FOR SERVICE CAN HAVE UNINTENDED CONSEQUENCES

THE EVOLUTION OF A BUS ROUTE

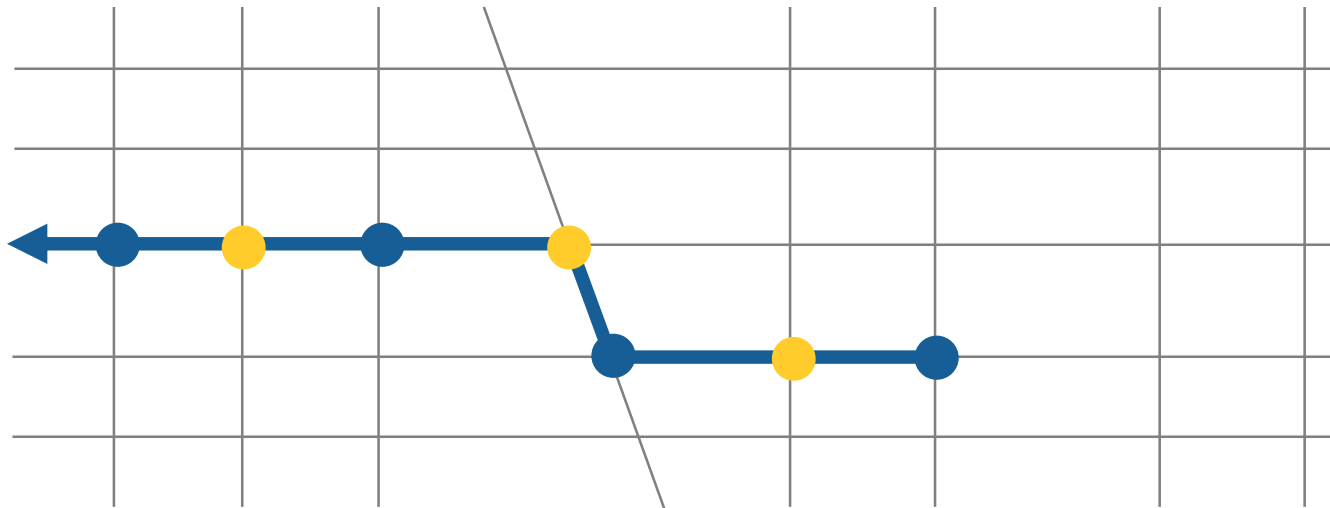
In the beginning, there was a well designed route that was direct, had well spaced stops, and performed well...



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

THE EVOLUTION OF A BUS ROUTE

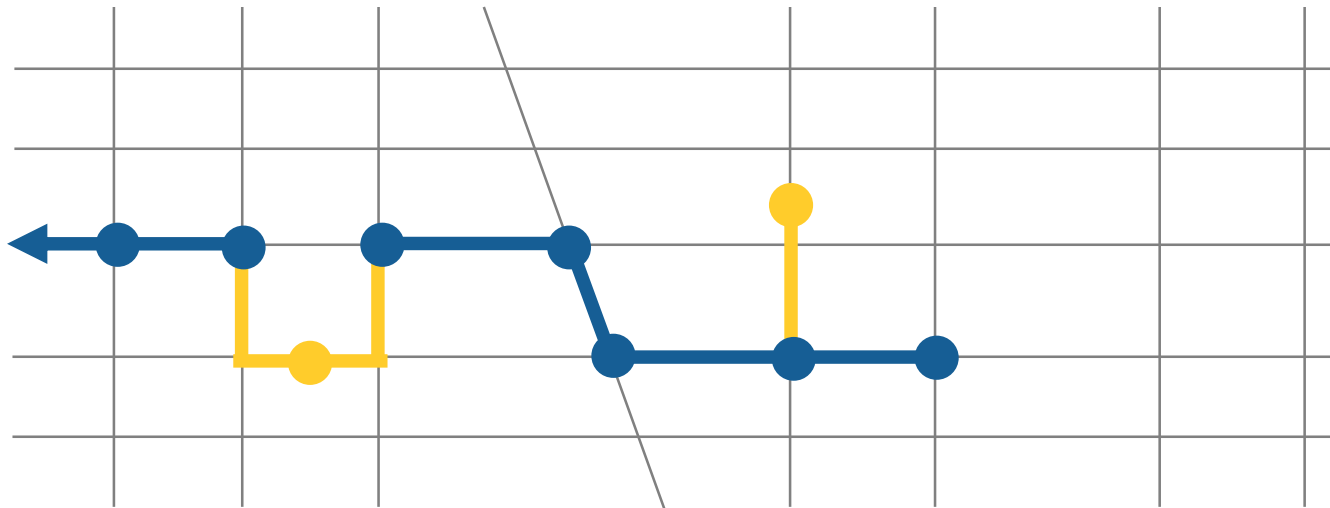
Over time, some passengers asked that stops be added so that they didn't have to walk as far. The transit agency, being responsive, added them.



Ridership	<-1%	4,950
Cycle Time	+2 min	62 min
Headway	No change	10 min
Buses Required	+1	7
Pax/Vehicle Hr	-15%	35.4
Cost/Pax	+18%	\$2.83

THE EVOLUTION OF A BUS ROUTE

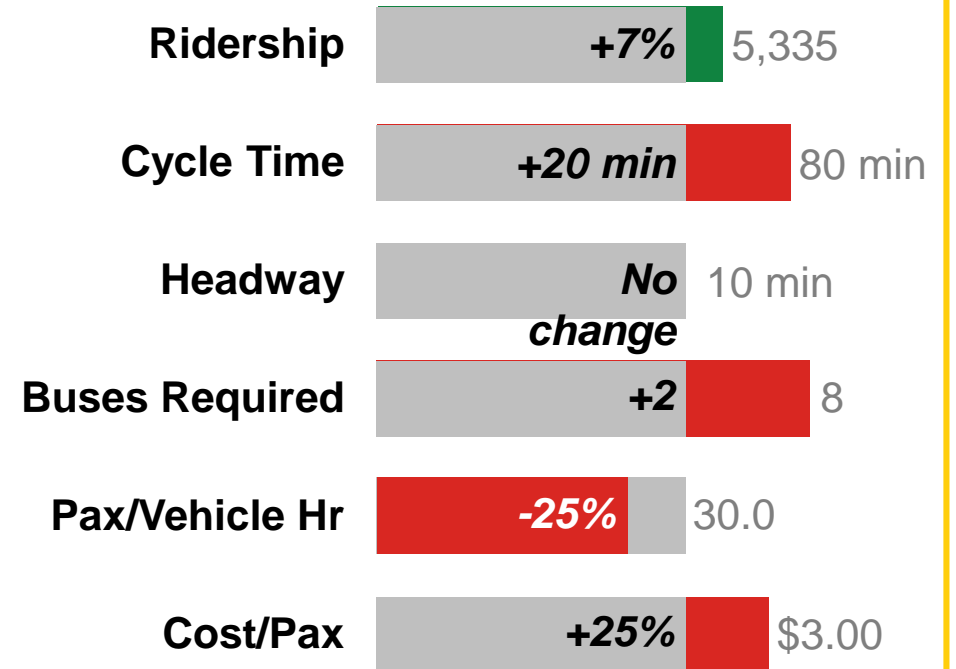
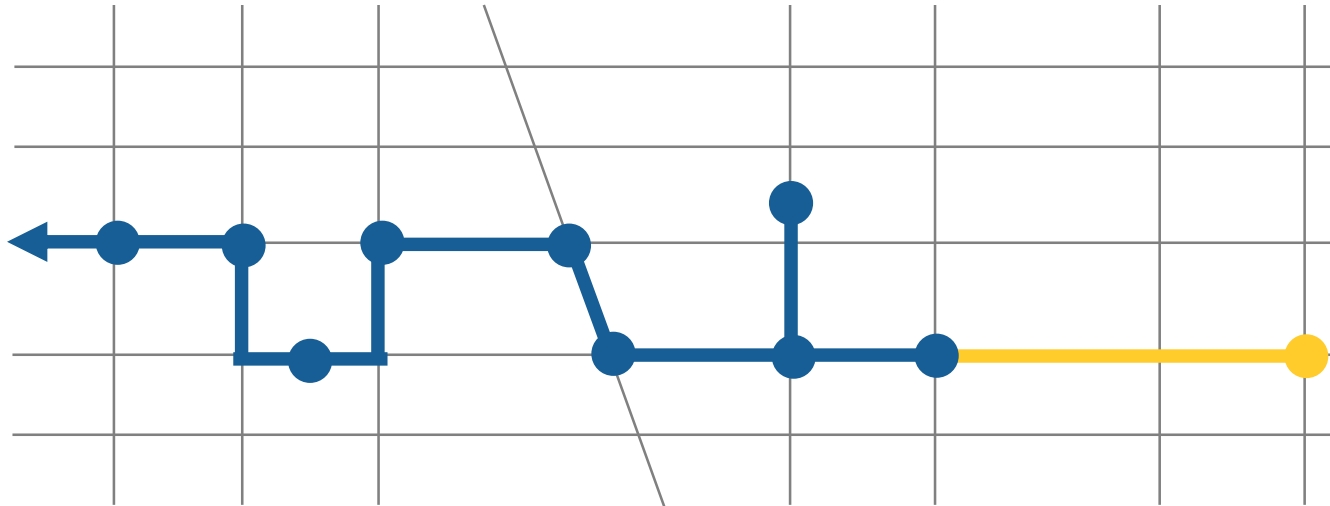
Then, two new apartment complexes opened near the route. So that residents didn't have to walk to the bus, the bus went to them.



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

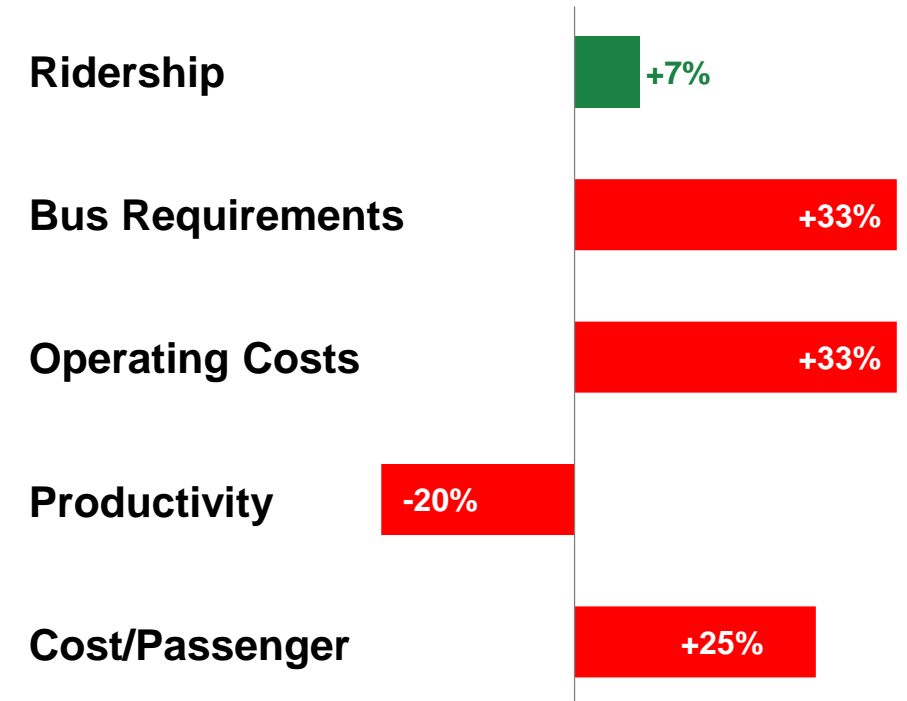
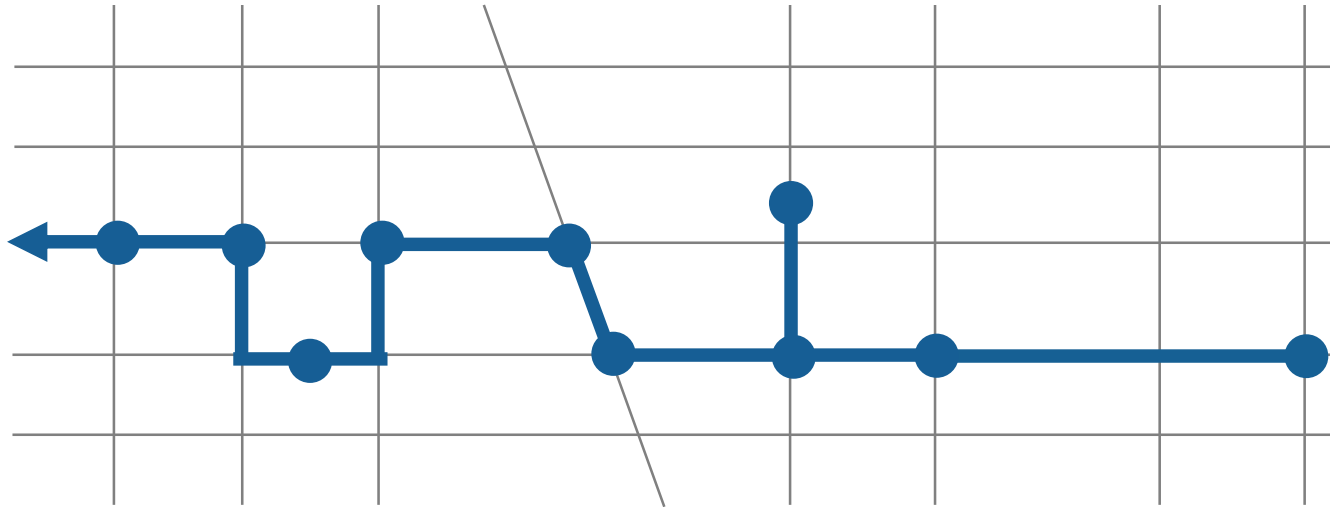
THE EVOLUTION OF A BUS ROUTE

Next, a new big box store opened beyond the end of the route, and the route was extended to serve it.



THE EVOLUTION OF A BUS ROUTE – LESSONS LEARNED

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



FEDERAL GOVERNMENT SUPPORT FOR TRANSIT IS DECLINING

- Bus replacement funding
- Capital Investment Grants (CIG) funding has declined
- Implications for Intercity Transit
 - Long range plan assumed:
 - No federal dollars for bus purchases after 2020
 - 50% federal match for OTC, Pattison, and BRT

POPULATION AND EMPLOYMENT PATTERNS CONTINUE TO EVOLVE

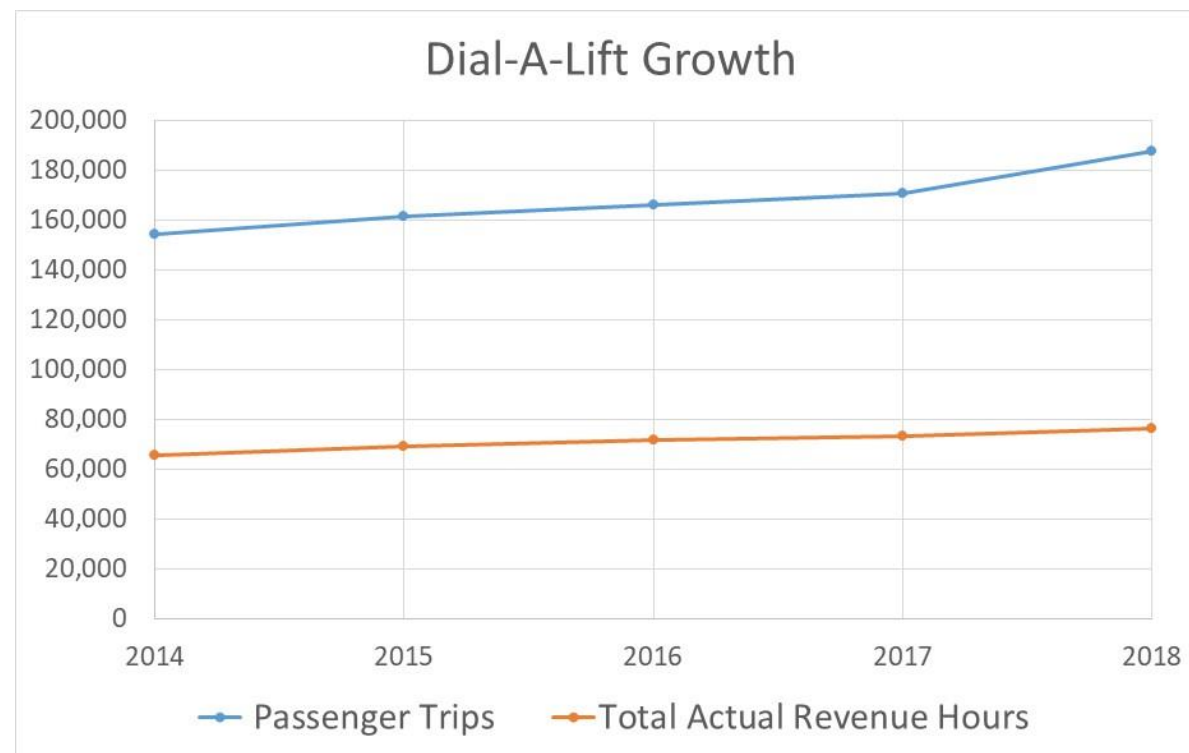
- New Development
- Changing patterns within service area
- Route ridership experiences, such as:
 - Route 68 ridership growth at SPSCC
 - Olympia Express ridership growth
 - Route 1 impacts
- Implications for Intercity Transit
 - Route performance still need to be examined
 - Today's route pattern may not be the same in five years

CHANGING HOW SERVICE IS PAID FOR

- Opportunity to immediately increase ridership by 30-40 percent
- Partnerships
- Capital (fareboxes)
- Implications for Intercity Transit
 - Big increases in demand
 - Transfer pressures will increase
 - Create new constituencies
 - Potential Capacity issues
 - Paratransit costs

PARATRANSIT RIDERSHIP AND COST GROWTH ACCELERATING

- Costs up over 10 percent since last year
- Requests for ADA-service boundary exemptions
- Implications for Intercity Transit
 - Boundary requests may increase costs significantly
 - Potential Solutions
 - Tighten eligibility
 - Hold at federally mandated $\frac{3}{4}$ mile boundary and service times
 - Develop partnerships with taxis for ambulatory passengers
 - Different vehicles (non-lift equipped vehicles)



CONSTRUCTION IMPACTS ON INTERCITY TRANSIT

- Roadway projects and new construction can have a negative effect
 - Examples: Marvin Road Interchange
- Implications on Intercity Transit
 - Recognize financial impacts of delays due to construction
 - Other regions (King County) have received mitigation dollars due to increased operating costs
 - Impacts for on-going detours due to new building construction could trigger mitigation discussions

EMERGING MOBILITY MODES COULD CHANGE SERVICE DELIVERY

- On-demand services
 - Flexible vehicles can provide coverage potentially at a lower cost
 - Reductions in need for ADA paratransit service
 - Serve trips that are currently indirect, such as in West Olympia
- Implications for Intercity Transit
 - Learn from national pilot projects
 - Pilot program
 - Expand, as demand expands, and adjust fixed-route network as necessary

IMPLICATIONS OF CHOICES FOR IMPLEMENTING MORE SERVICE

- Voter-approved plan is framework for service enhancements, but specific service detail questions will continue, including
 - Improve span
 - Increase route length or zone size
 - Operate more frequently, etc.
- Implications for Intercity Transit
 - Consistently apply criteria to address requests
 - Cost (short and long-term)
 - Ridership potential
 - Who/what is the market

PERFORMANCE METRICS TO IDENTIFY OPPORTUNITIES AND CHALLENGES

- How do you decide where to make additional service investments?
- What is equitable?
- How do you decide a route is underperforming?
- Implications for Intercity Transit
 - Develop service standards and policies

FINAL THOUGHTS

THANK YOU!



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