District Of Lake Country

INTEGRATED TRANSIT STRATEGY - Options Analysis

Prepared For: District of Lake Country
Date: September 22, 2022
Our File No: 3312.B01

WATT OKANAGAN
305 – 1350 St Paul St
Kelowna, BC V1Y 2E1
778-313-1014

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

In 2021, the District of Lake Country completed the Mobility Master Plan, a blueprint for the future of transportation in Lake Country that focused on Mobility and striking a balance between the various modes of transportation. In doing so, it also sought to improve the array of options available to everyone in the community irrespective of age, gender, physical ability or cognitive function.

Within the plan, there is a spotlight on building transit resilience in the community and improving the communities' access to and use of public transportation to get around Lake Country. The transit goal set in this plan and approved by Council is to increase transit ridership by 10% of 2019 annual ridership recorded by BC Transit.

WATT Consulting Group was engaged by the District to develop some approaches to increasing transit use in Lake Country. The Integrated Transit Strategy is a four-phase project that seeks to develop some holistic solutions to improve transit usage within Lake Country.

The Strategy utilizes the Mobility Master Plan and the Local Area Transit Plan (LATP) as its baseline and builds on previously completed work.

The Integrated Transit Strategy will:

- Be responsive to the Mobility Master Plan;

- Complement the LATP and BC Transit initiatives; and
- Develop short and long-term solutions that could increase transit ridership.

This report summaries Phase 1: Options Analysis of the Integrated Transit Strategy. In this phase, a toolbox of options for increasing ridership will be developed. In Phase 2: Operationalization Plan, will take feasible options from Phase 1, and develop operational plans, costing and implementation timelines for them. An Implementation Plan will be created in Phase 3 for the preferred option. The Implementation Plan will provide a roadmap for the District to go from idea to reality and will include all aspects of implementation from infrastructure improvements, costing, phasing, marketing and branding as needed. Finally, Phase 4 works through the Implementation of the chosen option(s).

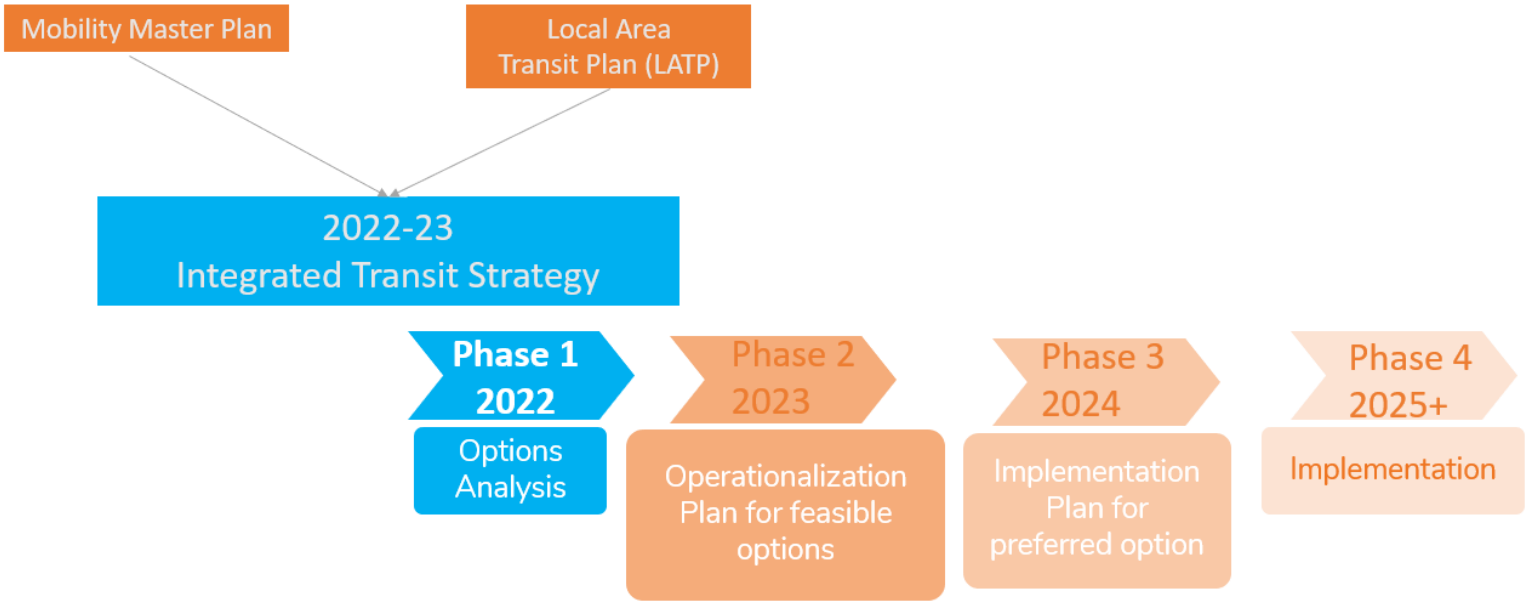


Figure 1: Phasing of the Integrated Transit Strategy

The next few sections describe the analysis and research work that went into understanding issues and opportunities in the District of Lake Country and developing options that would address the issues and take advantage of the existing opportunities.

2.0 BACKGROUND & CONTEXT

The District of Lake Country is part of the Regional District of Central Okanagan and is situated between Vernon and Kelowna. Transit service in Lake Country is provided as part of the Kelowna Regional Transit Service. A map is provided in **Figure 2** that includes the various transit areas within the Kelowna Regional Transit system. It should be noted that Vernon is not part of the same system but it's connection to Lake Country is important as well. From the 2018 Okanagan Travel Survey, it was found that 37% of Lake Country residents' daily trips were made to Kelowna and 6% were made to Vernon. Overall, only 1.3% of residents used transit to get to work indicating heavy reliance on Single Occupancy Vehicles for commute trips.

Two routes from the Kelowna Regional Transit system serve the District of Lake Country. **Route 23** connects Lake Country to the University of British Columbia Okanagan (UBCO) campus transit exchange. **Route 32** is Lake Country's in-town circulator service that provides weekday only peak service in the mornings and evenings.

From the Vernon Regional transit system, Route 90 connects Vernon to Kelowna and has couple stops in Lake Country. Out of the three routes, Route 23 is considered the workhorse of the system. The Kelowna Regional System is shown in **Appendix A**. The routes and their boarding statistics are shown in **Appendix B**.

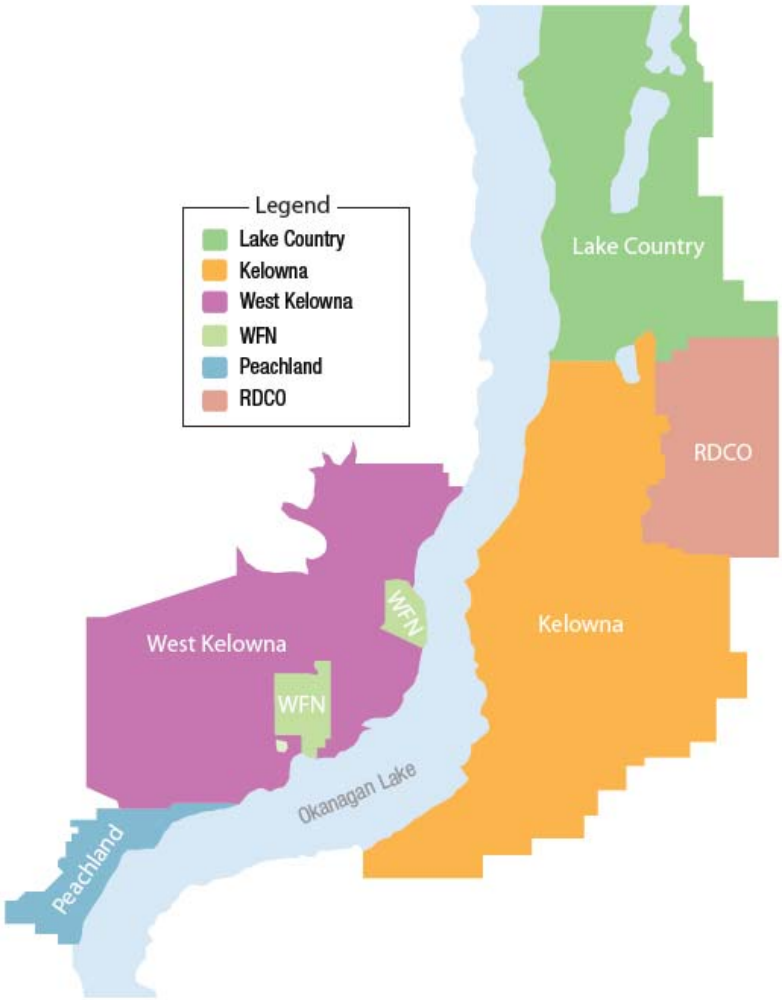


Figure 2: Kelowna Regional Transit Jurisdiction Areas

3.0 ANALYSIS

Transit System Performance

For a system comprised of only two dedicated routes and a limited stop service passing through, the Lake Country System has robust usage. COVID has certainly had an impact on usage. Subsequent labour shortages and resulting reductions in service have not helped and while ridership has started recovering, post-pandemic, the numbers are not nearly as healthy as they used to be in 2019. 2019 was the best year in terms of transit ridership in Lake Country. Reliability of service, half hour peak service in the mornings (getting students to UBCO), could all be factors contributing to the high 2019 ridership levels.

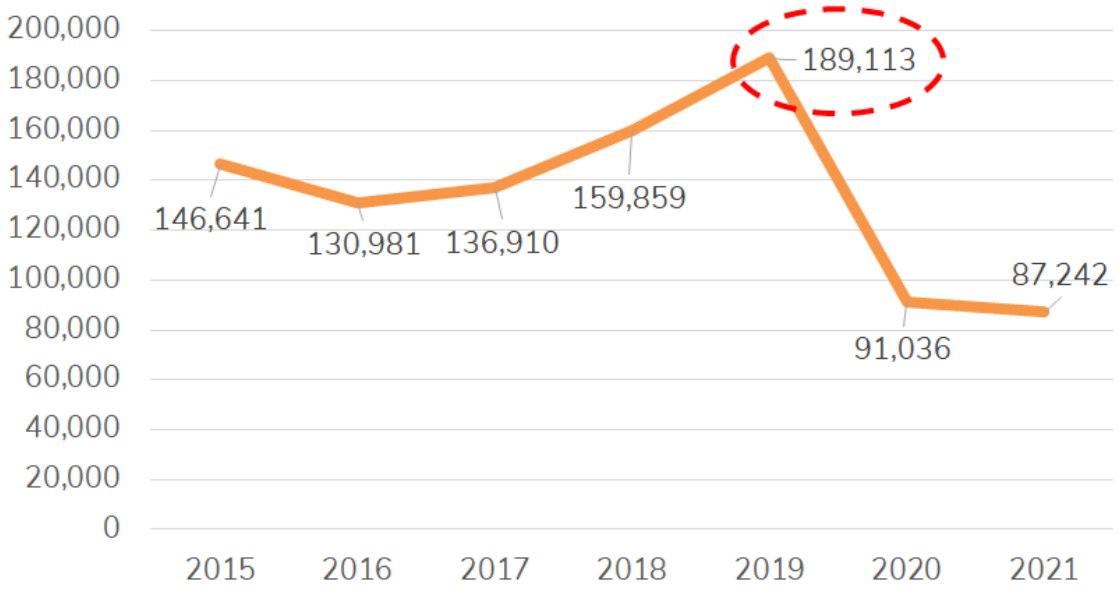


Figure 3: Long Term System Annual Ridership

Route 23 experienced significantly higher usage than Route 32 in both 2019 and 2021. The monthly ridership trends align with UBCO's school calendar. In pre-pandemic conditions, Route 23 had a larger sum of boardings than a sum of revenue hours; indicating an efficient use of resources into that route. In 2021, post-pandemic, Route 23 is still recovering its ridership volume, and the sum of revenue hours exceeds the sum of boardings.

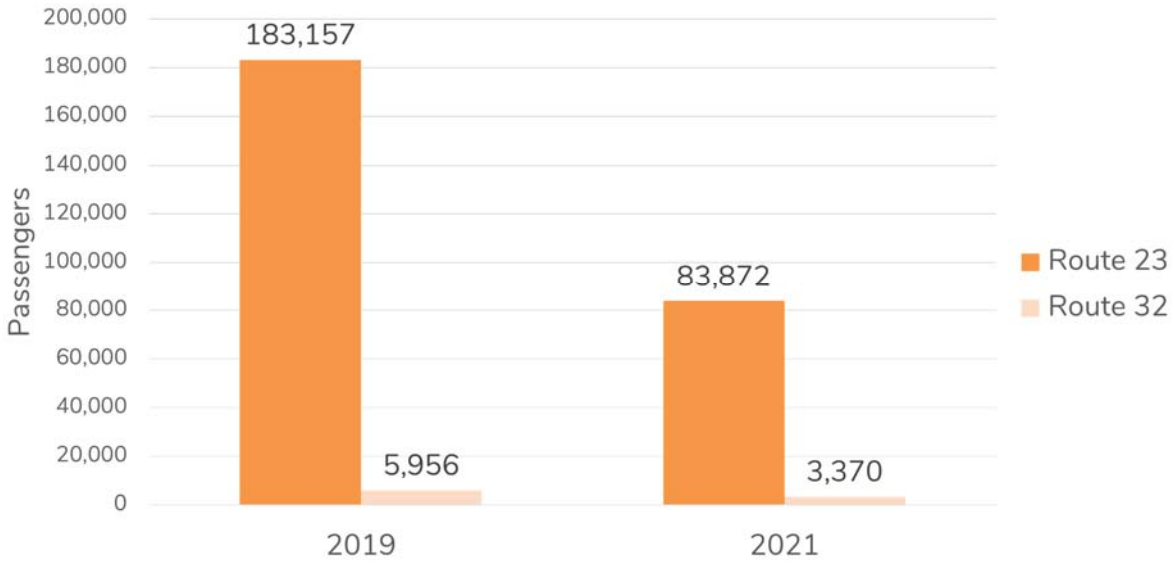


Figure 4: Annual Ridership by Route

When boardings and revenue hours are compared, it is evident that more resources are being pumped into Route 32 than being utilized. It is to be noted here that Route 32 only operates during the weekday morning and afternoon peaks where it attracts a very low number of boardings for each period.

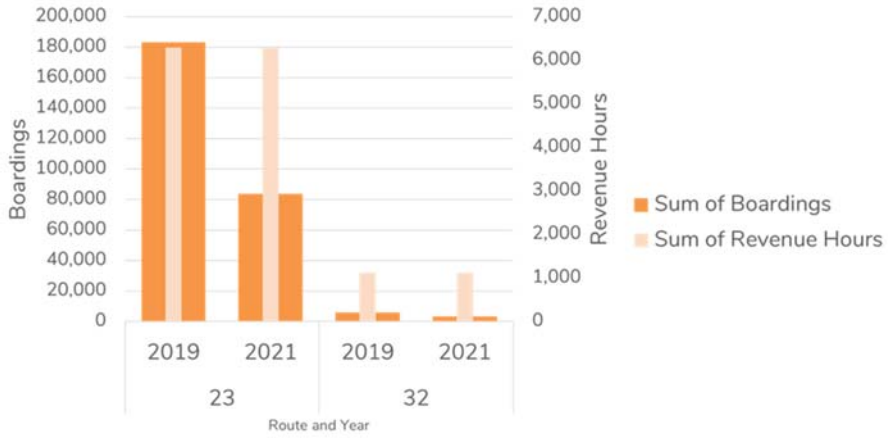


Figure 5: Annual Boardings and Revenue Hours by Route

Route 23 has highest usage during AM and PM weekday peaks. Saturday sees significantly lower ridership even though 30-minute service frequency is maintained similar to weekdays. Sunday has a lower 60-minute frequency and has similar ridership to Saturday.

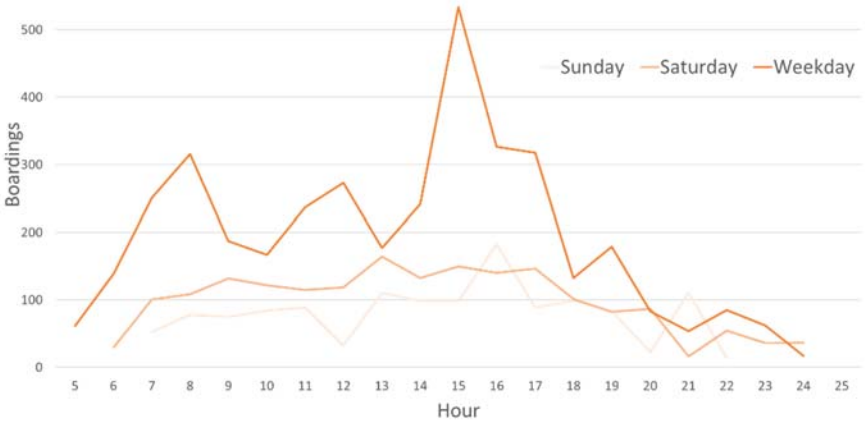


Figure 6: Route 23: Average Boardings by Trip Start Hour

The most popular stop pairs on Route 23 include UBCO, Innovation at Quail Ridge, Kelowna Airport, Berry at Bottom Wood Lake, Highway 97 at Beaver Lake, Highway 97 at Commonwealth, Oceala at Pretty, and Woodsdale at Bottom Wood Lake. It is to be noted that the first three stops listed are within the City of Kelowna and boardings and alightings at these stops indicate travel to and from Kelowna.

For more detailed information, **Appendix D** includes data on popular stops, and projected boardings by time of day and day of week. The monthly, hourly ridership trends and annual boarding and revenue hour trends are shown in **Appendix E**.

Gap Analysis

The transit system in Lake Country provides north-south coverage and with its two routes connects to most major service, recreation, and employment destinations in Lake Country. East- west connectivity and coverage is low. The system as designed currently serves only two of the four wards in Lake Country as Carr's Landing and Okanagan Centre are not served by transit. With lower-density residential and agricultural land uses in these wards, conventional transit service is perhaps not a suitable service type, but other service types like On Demand transit could be considered for these areas.

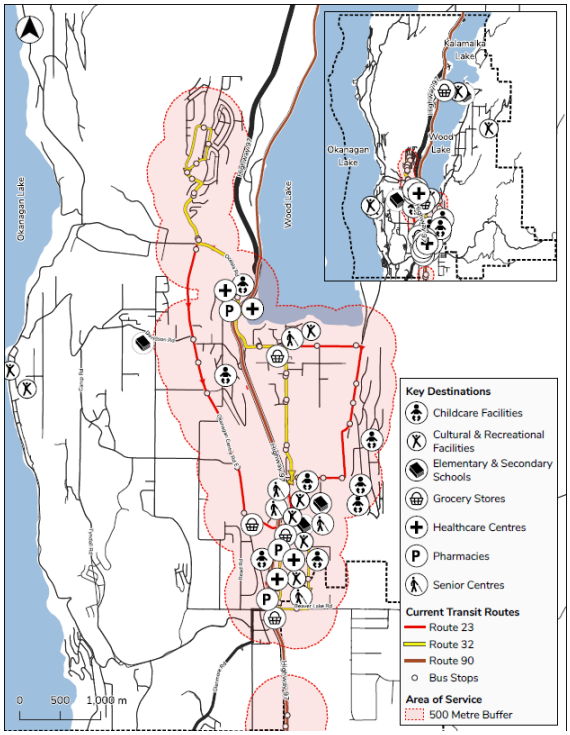


Figure 7: District of Lake Country Destinations and Areas of Service

Having analyzed transit coverage across population cohorts, senior facilities and services are well served by transit. There are gaps in service for youth, given the east-west connectivity issue in that if you do not reside in the core part of Lake Country it is not easy to access transit service, being dropped off and picked up by parents is perhaps an easier alternative.

In addition, the transit system as it is currently designed does not really provide connectivity to the major recreational destinations in Lake Country- the wineries and beaches. In some ways it would not be wrong to say that the transit system does not support "play" or "life, the Okanagan way". Maps included in **Appendix C** provide visualizations of these observations.

Municipal Comparison

To help understand the present-day health or operations of transit in Lake Country, a comparison to other similarly sized municipalities with similar transit needs was completed, see **Table 1**.

	Lake Country	Powell River	Coburg	Prince Rupert
Municipal population	13,000	12,000	20,000	12,000
Service Area population	13,000	12,000	11,000	12,000
Municipal area (sq km)	122	29	13	55
Number of routes	2	6	2	7
Annual ridership/boardings	187,000	212,000	99,000	277,000
Annual revenue hours	11,600	11,700	8,700	10,000
No. of buses	3	5	4	5
Direct Operating Expenses	$1,450,000	$1,300,000	$750,000	$1,100,000
Operating cost per boardings	$7.81	$6.22	$7.22	$4.09
Operating cost per rev hour	$126.21	$112.26	$82.69	$114.07

*District's contribution is ~$800,000 (figures exclude HandyDart and Rt 90 expenses)

Table 1: Transit System Comparison

Comparing Lake Country to Powell River, Coburg, and Prince Rupert, Lake Country has a similar population base but spread out over a larger area. The result is a transit system that is marginally more expensive to operate per boarding and per revenue hour.

Appendix C provides details on the specifics within the Lake Country system regard population density, demographic, and destinations. The relatively high cost per boarding creates opportunities to integrate other forms of transit into the network such as Digital On Demand Transit as a possibly more efficient option.

Summary – The Lake Country Transit System, as it is currently configured works well for a part of the community that commutes to UBCO and into Kelowna on a regular basis. This is evident in the ridership numbers on the Route 23. However, for local travel, within Lake Country, the system as it is set up is not serving the majority of its residents: youth, working adults that do not have access to a car, families that are headed out to the beach on a summer day that could benefit from convenient, consistent, accessible service.

4.0 CASE STUDIES

As part of this study, WATT also conducted three case studies in different provinces of transit systems and not managed by BC Transit. It should be noted that two of these systems are in Alberta and have more flexibility given the transit authority is managed at the municipal level.

ROAM Transit

ROAM is the transit authority in Banff and Canmore, Alberta.

ROAM has a total of 10 routes that are a mix of short, local trips and long, regional trips. Key features of the ROAM transit system include free transit for local residents and there are also partnerships in place for hotels to provide transit passes to guests. Children under 12 years old also ride free. In this system, the lost revenue from fares is partly offset from parking revenues.

Other notable features of the system include

- High fares for the long-distance regional routes
- 20 to 30-minute frequency on local routes
- 30-minute frequency on regional routes

Weekend service is the same as the weekday and results in a consistent easy to remember schedule. An app makes purchasing fares easy and accessible. The app also allows long-distance commuters to reserve seats in advance. ROAM transit is equipped with real-time GPS bus tracking and is comprised of a hybrid-electric fleet. The 16 routes in the ROAM transit system gather a total of 1.5 million annual boardings over 49,000 annual revenue hours, 1.4 million annual kilometres, and $4.7 million in annual operating expenses. 14% and 50% of the funding for ROAM is from the federal government (Parks) and the municipality respectively.

COLT Transit

The second case study is from Cochrane, Alberta. Cochrane has a population of 34,000 for the Cochrane On-Demand Local Transit (COLT) service. They operate a municipal Digital on Demand Transit service (DoDT). This service was launched through a pilot program in 2019 and provides local service only.

COLT has no fixed routes, instead buses can be requested up to a week in advance, or with just a few minutes' notice; requests are completed using the app, website, or phone and are subject to availability.

- Operating hours are 6 am to 8 pm Monday to Friday and 9 am to 3 pm on Saturday.
- The transit fare is $2.50 and can be paid via the app or with cash.
- Transit users are picked up at designated stop locations.

COLT's fleet is comprised of eight low-floor buses, with four in service at a time, depending on the requests. The 21-seat buses are complete with accessible entrance ramps, one wheelchair space, and bicycle racks. The transit system operates on a net budget of $600,000 per year and averages a $64 cost to run per service hour. In comparison the District of Lake Country cost per hour cited in Table 1 above, this is quite economical. The cost advantage is likely due to the services being contracted out, among other operational considerations. Pre-COVID it had 4.6 boardings per hour and during COVID it had 2.9.

Naramata Wine Bus

In 2022, a private business in Naramata, British Columbia launched a wine bus. The system has three trolleys that offer service up and down the Naramata Bench and focuses on winery locations. The buses boast charm and generate excitement from customers and pedestrians with their trolley bell chime and old-time allure.

The main pick-up site is in a central Penticton location. The drop-off locations are flexible. Users have reported the bus drivers as friendly and accommodating to passenger needs. It costs $50 for a daily hop-on hop-off ticket (only a full day ticket is available). No single ride option available. While this price is very steep compared to conventional transit, it is economical when compared to wine tour options. It offers hourly service on the weekends and trips every two hours service on weekdays. This service is tourist-focused and is only offered during the summer months. Due to the antique nature of the buses, they are not wheelchairs accessible.

Summary – Each of these case studies is very different from Lake Country in the nature of the service they provide, the population of the area, the funding and governance of the service and its usage. The take-away for the consultant team was the applicability of some of these models in Lake Country. Does a community have to have only a single type of service? Can there be different types of services serving different areas of a community and different functions: commuting, recreation? Perhaps, one size does not fit all as is currently designed.

5.0 STRATEGIES

A holistic approach has been followed to develop service strategies to address the gaps identified in transit service in Lake Country in the preceding sections. Such an approach includes the development of transit supportive policies, service strategies that serve the varying needs of a community and accompanying infrastructure improvements and well-designed marketing campaign designed to increase awareness of services and increase partnerships with local business with the goal of creating a support base for transit amongst the business community as well. For Phase I we will be focusing on the transit supportive policies and service strategies only

Policy Considerations

A four-point approach to transit supportive policies is recommended for success. Some of these policies have also been identified in the Mobility Master Plan. The policies identified below are self-explanatory and not much detail is needed to describe each, except for the First Mile Last Mile Transfer policy. Park and Rides, shared mobility solutions like e-scooters and e-bikes, walking and biking connections to transit all make using transit convenient and attractive. A number of municipalities in Alberta and Ontario have seen successful uptake on not just these services but also on transit with the introduction of these services in these municipalities.

PARKING RESTRICTIONS

- Reduce congestion
- Source of revenue for transit improvements
- Makes driving less desirable

FIRST-MILE LAST-MILE TRANSFERS

- Taxi, rideshare agreements
- Electric scooter or bike share program
- Multi-modal connections & network

SUPPORTIVE HOUSING POLICIES

- Attracts UBCO students to live off campus; secondary suites; higher density residential
- Attracting seniors' housing facilities

INCENTIVIZE TRANSIT

- School passes
- Seniors' free ride program
- Community Pass program

Service Strategy #1: Streamlining Rt 23 and Rt 32 Schedules

What: Coordinating schedules of the Route 32 to better meet with the Route 90. Streamlining the schedules of the Route 23 to better align to provide three trips an hour in peak uniformly.

Why: Enables the Route 32 to pick up locally so people can connect to the Route 90 and have an alternate option to travel to UBCO and the airport. Another advantage of this option is that there is a perception of consistency of service to UBCO (every 20 minutes in peak)

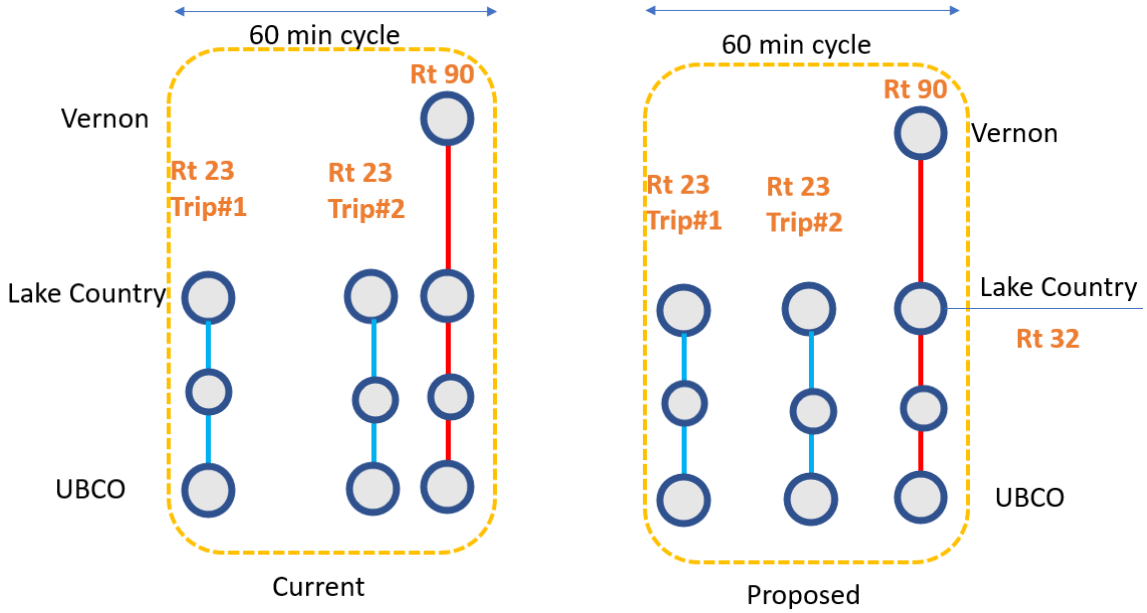


Figure 8: Service Strategy #1 - Current and Proposed Service

Service Strategy #2: Summer Seasonal Service

What: Summer seasonal service. This could be BC Transit run, privately operated or run by the District of Lake Country. Service would be:

- Loop route(s)/Trolley/"fun bus"
- Hop on/hop off type of service
- Start as a pilot for a summer, accompanied by parking restrictions and parking fees to incentivize the use of the summer service.
- Largely serving the beaches, but could also serve wineries on route if financially supported by wineries
- 30/60-minute-long loops depending on routing and possible serve a majority of the different beaches in Lake Country. Some beaches in Carr's Landing would be operationally challenging to serve.
- Ideally uses one bus, that could alternate between two beach/wine loops

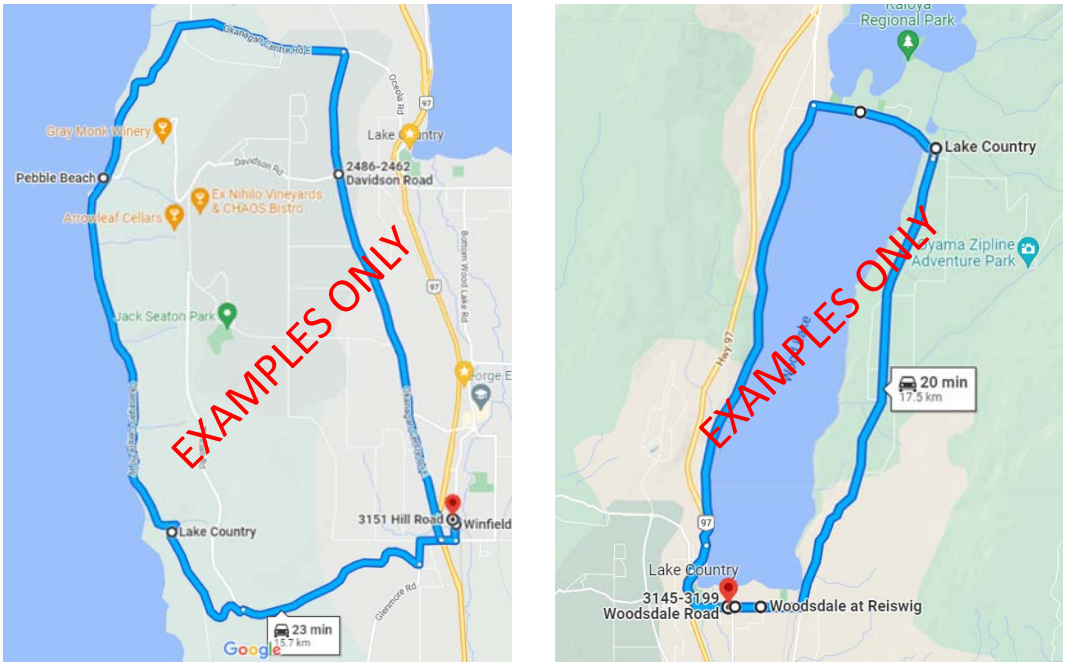


Figure 9: Service Strategy #2: Example Routes

Why: Addresses the gap identified in this study to recreational destinations on transit as well as the traffic congestion issues on the narrow roads leading up to the beaches.

Service Strategy #3: Digital On Demand Transit (DODT) Service

What: In existing transit routes, where boardings per hour are less than 10 boardings an hour (which is the case for the Route 32 currently), Digital On Demand Transit is a more efficient way of serving the occasional and infrequent need for local travel. Service highlights include:

- Starting as analog and converting to digital when BC Transit ready for technology upgrades
- Ideally two to three layover locations, covers all four wards
- Customers would be promised a maximum wait time of 15-minutes
- This service would replace the Route 32 and further exploration would be needed to see if Sunday service on the Route 23 could be replaced by this service.
- This service is not recommended for connecting to UBCO
- Could use ~2,000 hours from Rt 32 and HandyDART hours
- Agencies have had success with integrating handyDART and regular service into Digital On Demand Transit.

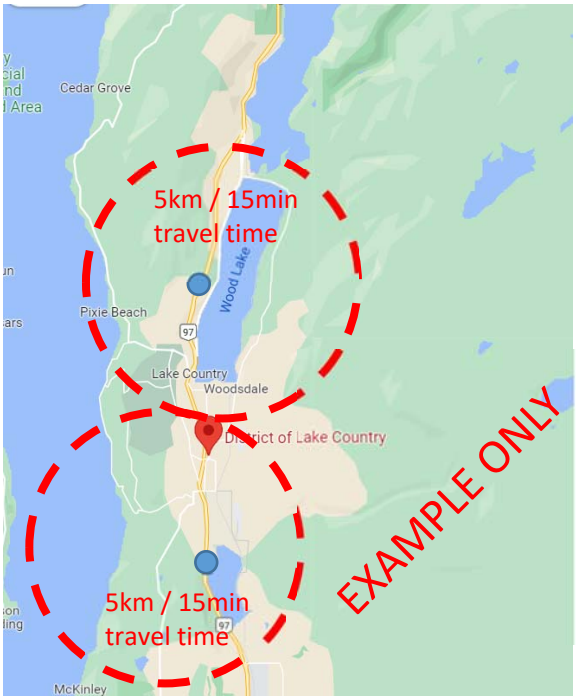


Figure 10: Service Strategy #3 - Example Service Areas

Why: Addresses the gap identified in the two wards of Lake Country as well as the west side of Lake Country with lower residential density.

This would be a customer-friendly way to serve the local travel needs of the Lake Country residents.

Service Strategy #4: H97 RapidBus Extension + DODT services

What: In this strategy, the idea would be to use a majority of the service hours from Route 23 towards the extension of the Rapid Bus (H97) to Lake Country. This would provide the half hour service to UBCO as is, but also a one-seat ride into Kelowna, which could work for a number of people commuting to Kelowna everyday for work. Highlights of this strategy include:

- Replacing Route 23 with this regional Rapid connection to West Kelowna, Kelowna, UBCO and the Airport.
- Every other bus from UBCO continues to Lake Country to provide 30min service at Berry and Bottomwood Lake stop.
- DODT services Lake Country locally and connects to Route 97 RapidBus stations in District.
- Direct to downtown Kelowna and more transfer options provided.
- Possible City of Kelowna funding support for airport stop.

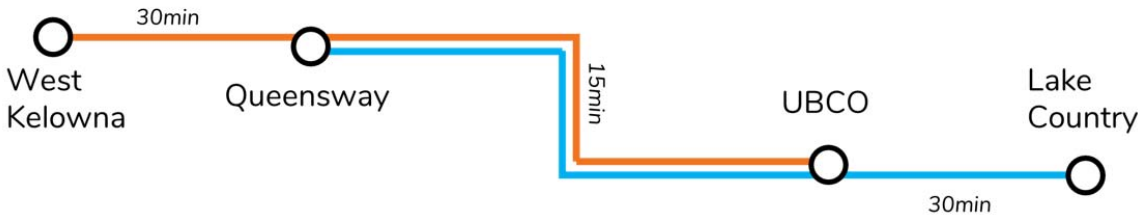


Figure 11: H97 RapidBus Extension

Why: While local travel is a big part of the daily travel within Lake Country, the 2018 Okanagan Travel Survey identified that 37% of daily trips from Lake Country are to Kelowna. This strategy addresses this segment of people and ideally converts them into daily commuters, thereby increasing transit ridership originating from Lake Country.

Service Strategy #5: H97 RapidBus Extension + DODT services + free local transit

What: This Strategy focuses on free local transit services within Lake Country with fare paid regional services. Local service will be a combination of Strategies #2 (Summer seasonal Service) and #3 (Digital On Demand Transit) discussed above. These services would be provided free of cost to incentivise the use of transit. Regional service, key to maintaining north-south regional connectivity, will be provided through BC Transit with the Route H97 to Kelowna and the Route 90 to Vernon.

Why: Transit service is considered an essential service in many communities, similar to how a network of roads serves an essential role in connecting major destinations. Given that almost 50% of trips are within Lake Country (from the 2018 Okanagan Travel Survey), this could be a very effective way of encouraging transit ridership within Lake Country. In addition, providing the service for free creates a service that is accessible by all, equitable, as well as easy and convenient to use. If this is something Council is keen to pursue, details on funding sources and mechanisms for funding will be worked out in Phase 2 of this project. In some communities, parking revenues have been used to partially fund free local transit service.

Service Strategy Summary & Bundles

The advantage of developing independent service strategies is the ability to combine them for greater efficiency and benefit to the users.

Below we illustrate some of the combinations possible with the strategies recommended above. It is to be noted that BC Transit service is required for regional connectivity in all bundles. Further, Bundle 1 is the existing service and represents status quo. Each bundle presents pros and cons from a qualitative perspective as illustrated below.

Figure 12: Transit Service Bundles

Overall, Bundle 3 presents improved transit connectivity locally and Bundles 4 and 5 improve both regional and local transit connectivity, thereby making all three, strong candidates to explore further. A very high-level review of costs for each bundle is provided in **Table 2** along with comparisons to the current service. These costs assume reallocation of current resources where possible, however as we move to bundles 4 and 5 some additional funding will be needed for sustained operations. In some communities this has come from parking fees, some others work with businesses (in the case of the District, it could be the wineries) to develop partnerships and leverage funding, some others use taxation as a way of paying for additional and improved transit service in the community.

	BC Transit	BC Transit Hybrid			
	Bundle 1	**Bundle 2**	**Bundle 3**	**Bundle 4**	**Bundle 5**
Description	**Rt 23 + Rt 32 + Rt 90 (minor changes to schedule + LATP)**	**Rt 23 + Rt 32 + Rt 90 + Summer Shuttle+ HandyDART**	**Rt 23 + Rt 90 + Summer Shuttle + DODT+ HandyDART**	**H97 Rapid Bus + Rt 90 + Summer Shuttle + DODT+ HandyDART**	**H97 Rapid Bus + Rt 90 + Free Summer Shuttle + Free DODT + HandyDART**
Service Details	Status quo + HandyDART	Rt 23 + rt 32+ rt 90 + Summer service = May long weekend to Sept long weekend 12 pm am to 10 pm service @10 hrs per day Monday to Sunday + HandyDART	Rt 23 + rt 90 + DODT runs from 8 am to 5pm @ 9 hours per day, Monday to Saturday + Summer service from May long weekend to Sept long weekend@10 hrs per day Monday to Sunday + HandyDART	Rt 90 + H97 Rapid Bus runs half hour service 14 hours a day, Monday to Sunday + DODT runs from 8 am to 5pm @ 9 hours per day, Monday to Saturday + Summer service from May long weekend to Sept long wend@10 hr per day M to S + HandyDART	Rt 90 + H97 Rapid Bus runs half hour service 14 hours a day, Monday to Sunday + Free DODT runs from 8 am to 5pm @ 9 hours per day, Monday to Saturday + Free Summer service from May long weekend to Sept long weekend@10 hrs per day M to S
Local connections	=	++	++++	++++	++++
Regional connections	=	=	=	++++	++++
Accessibility	=	++	++++	++++	++++
Customer friendly	=	++	++++	++++	++++
Total Cost*	1.14 M	1.22 M	1.12 M	1.47 M	1.49 M

= similar as current; ++ improved; +++ to ++++ significantly improved.

*High level cost estimate based on maximum levels of service and does not include any capital costs (infrastructure, new buses).

Table 2: Service Strategy Bundle Comparison

Given that expectations regarding service levels has not been attributed to any of the strategies at this time, it is not possible to qualitatively evaluate these strategies accurately at this point. Phase 2 work will include assessing each strategy against a minimum, optimum and maximum level of service (days of service, span of service and frequency of service) based on which costs will be calculated. These costs will also take into account the infrastructure and vehicle needs of each strategy and the resulting cost implication.

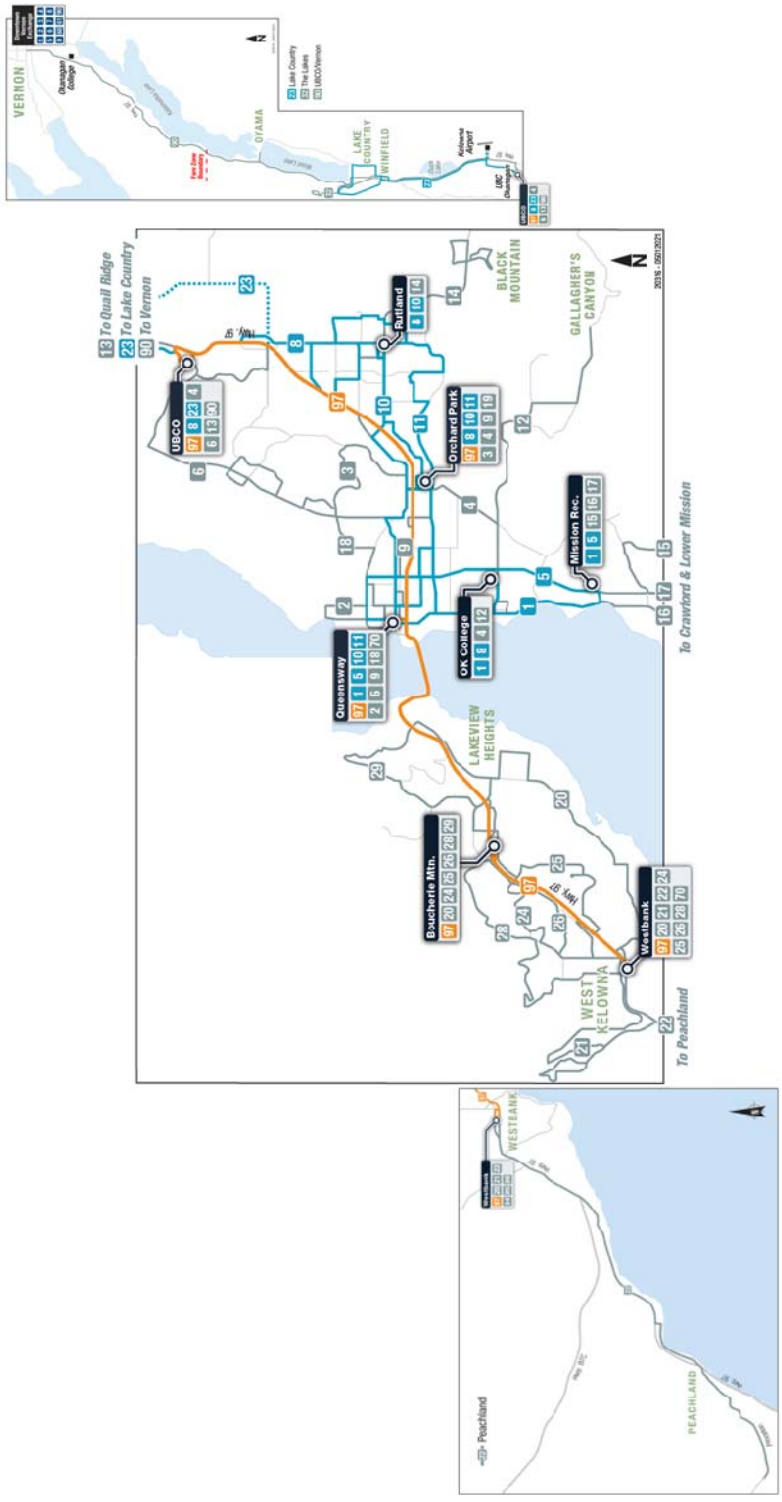
6.0 RECOMMENDATIONS

In keeping with the objectives of the Mobility Masterplan of increasing transit ridership 10% from 2019 levels and ensuring balance and equity in transportation options within Lake Country. Building towards Bundle 5, it is recommended that the consultant team further explore the options described in this report for the optimum solution in terms of service, coverage and resource utilization. In addition, this assessment should take into account coordination with current school service and ways of improving safe access to school for students in the District.

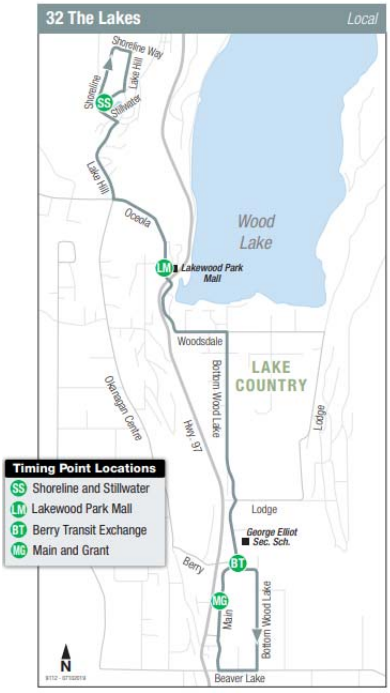
7.0 NEXT STEPS

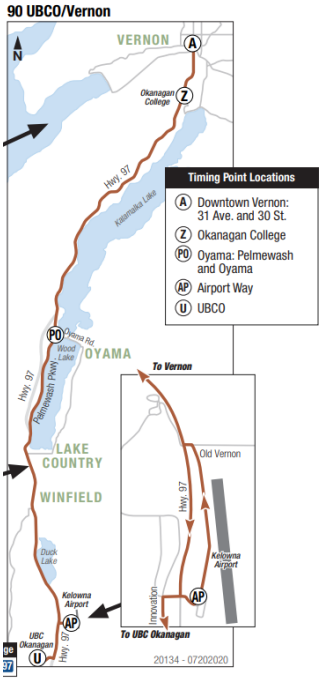
- Start Phase 2 to develop detailed Levels of Service (LOS)
- Develop preliminary/high level costs for the strategies approved by Council to move forward
- Objective evaluation of strategy bundles
- Based on an objective evaluation, provide a recommendation for implementation
- Formalize recommendation in a report

Appendix A – Kelowna Regional System



Appendix B – Current Lake Country Transit Routes

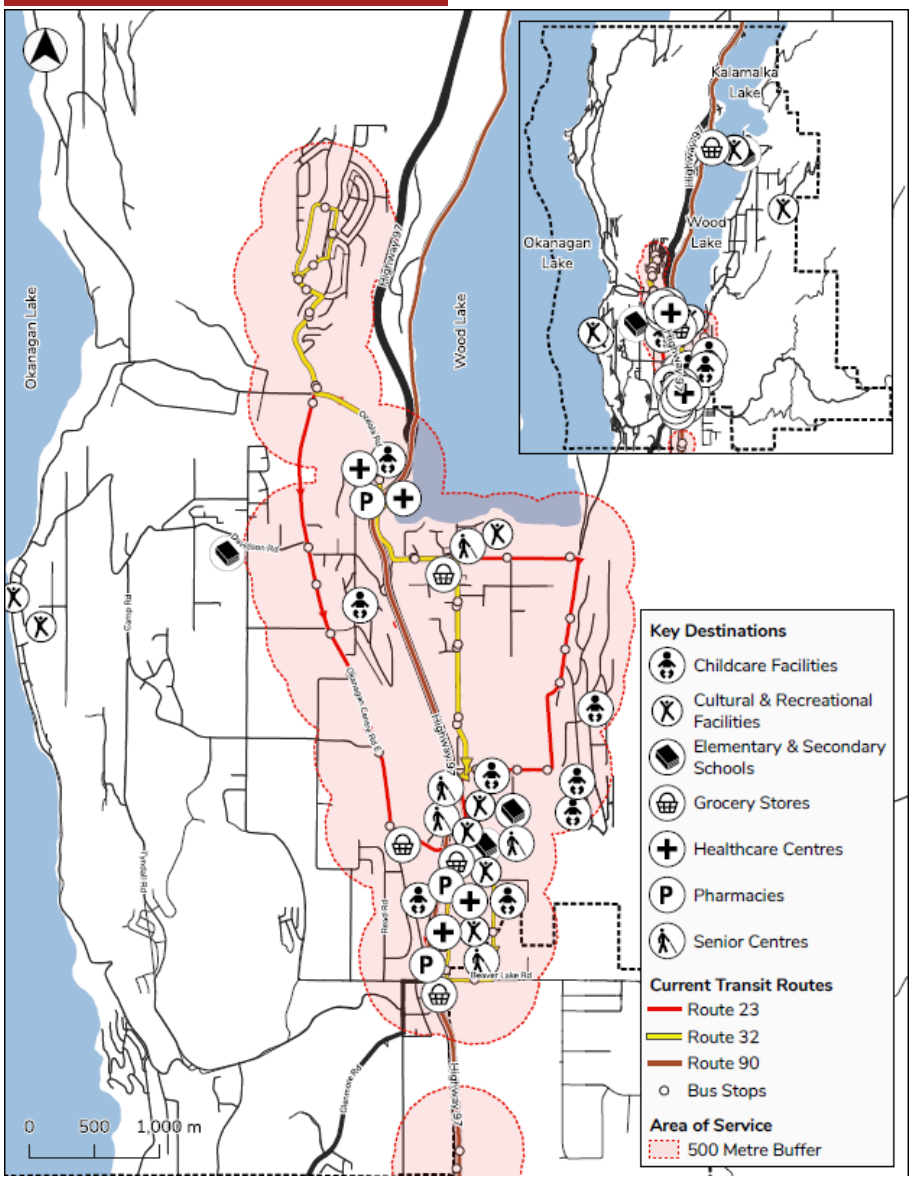




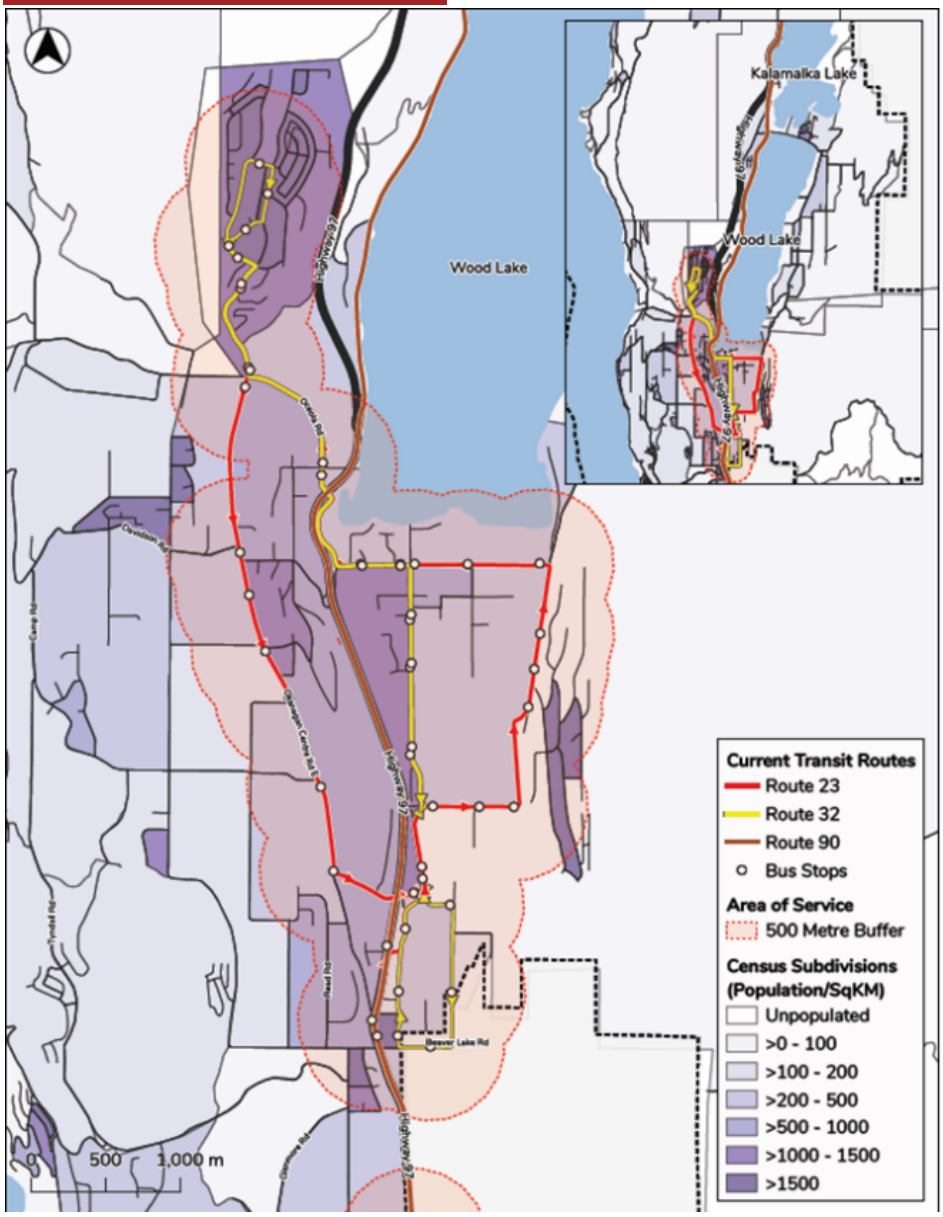
		23	32	90
Route Name		Lake Country	The Lakes	UBCO - Vernon
Operates with Route:		32	23	-
Annual	Total Boardings	84,000	3,400	N/A
	Total Hours	9,000	1,750	N/A
	Boardings per Hour	9.3	1.9	N/A
Weekday	Frequency (in min)	30	35	60
	Approximate Service Span	6:00am - 12:30am	7:00am - 8:30am 3:00am - 6:00pm	8:00am - 9:00pm
Saturday	Frequency (in min)	30	Weekday Only	120
	Approximate Service Span	7:00am - 1:00am		9:00am - 7:00pm
Sunday & Holiday	Frequency (in min)	60		180
	Approximate Service Span	8:00am - 10:30pm		10:00am - 6:00pm

Appendix C - Gap Analysis

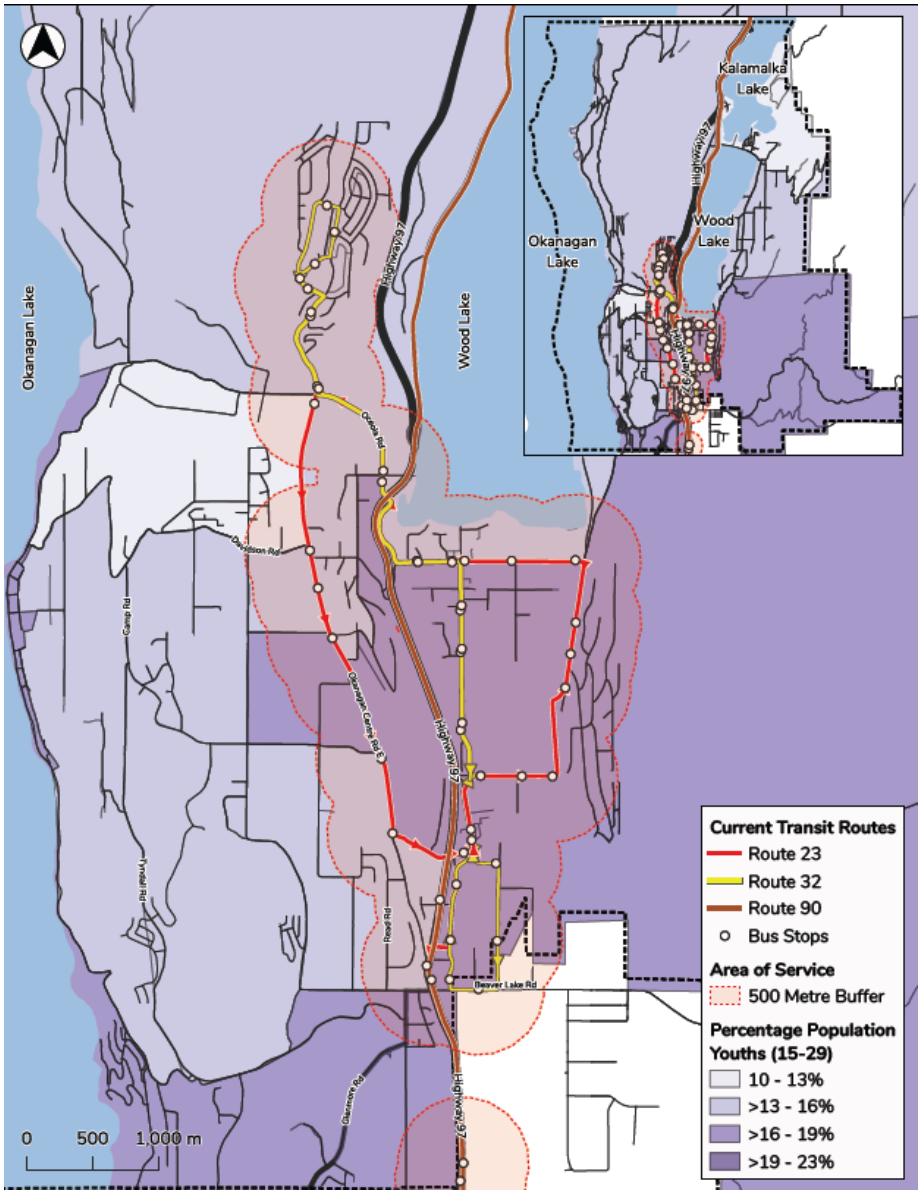
Major O&D and existing routing



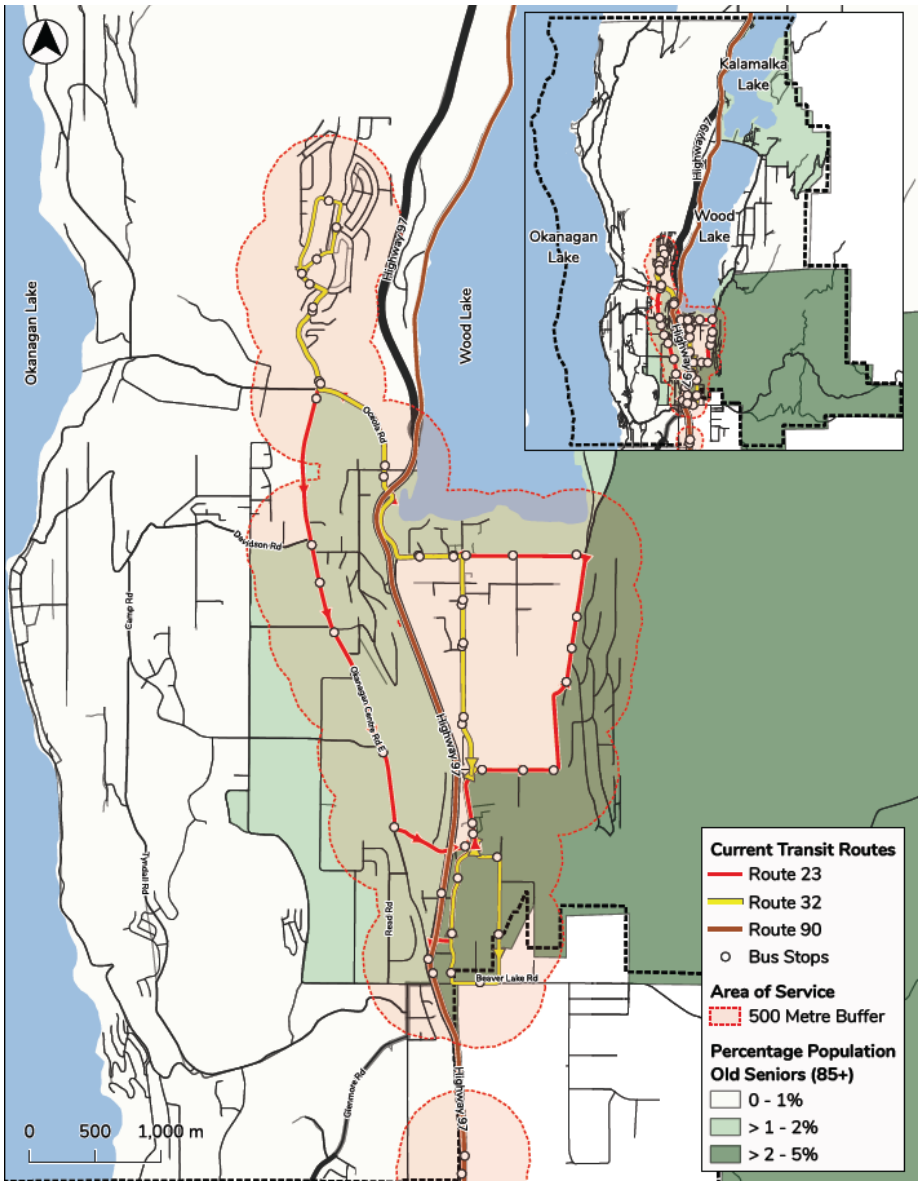
Density and existing routing



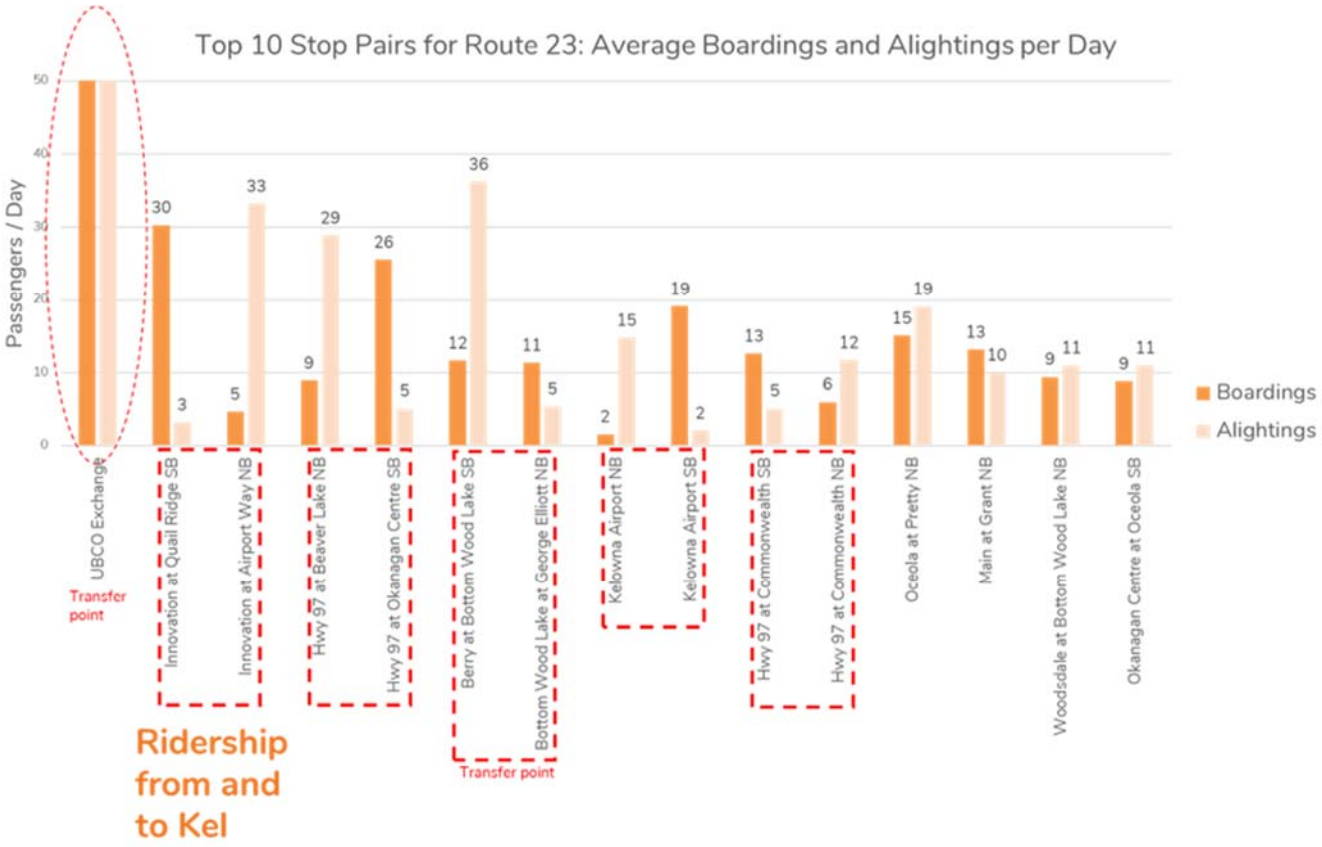
Youth and existing routing

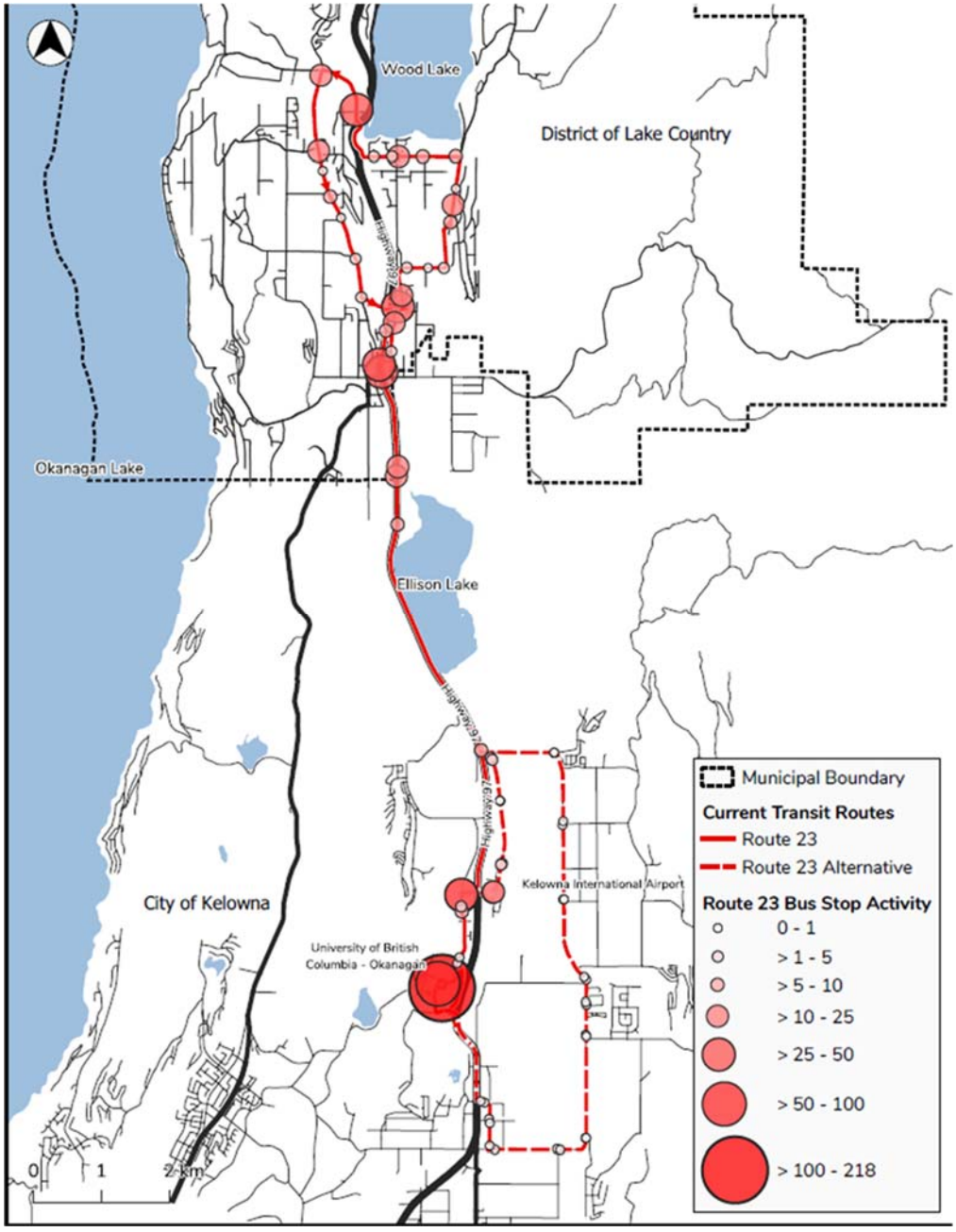


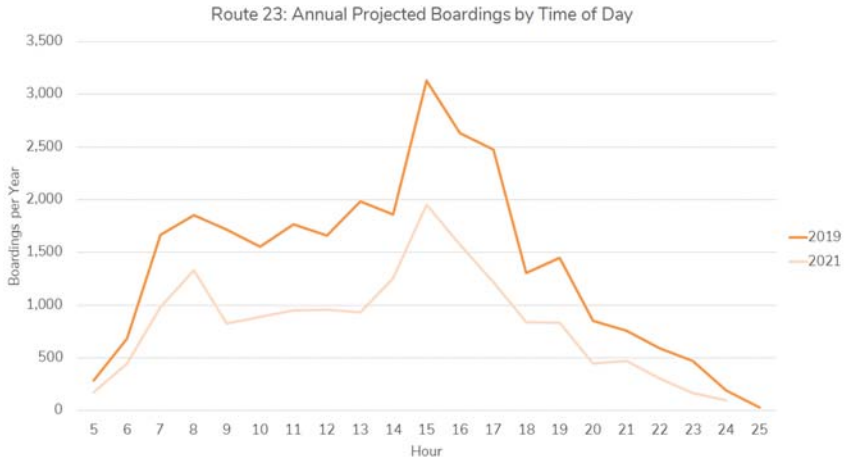
85+ seniors and existing routing

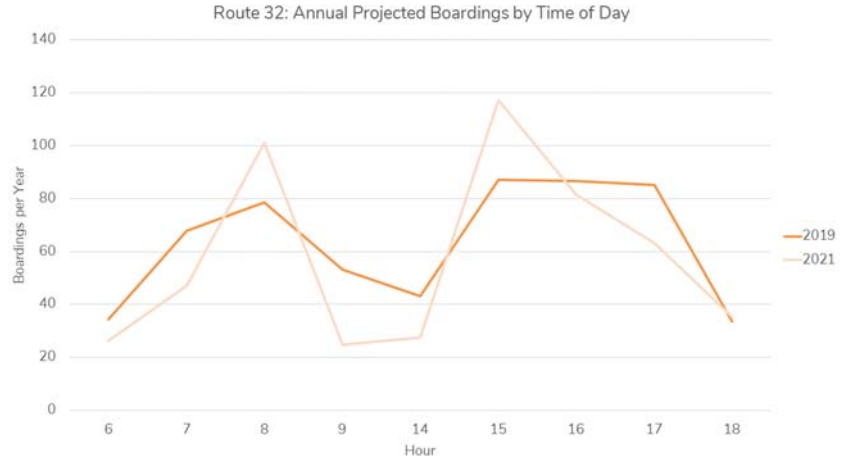


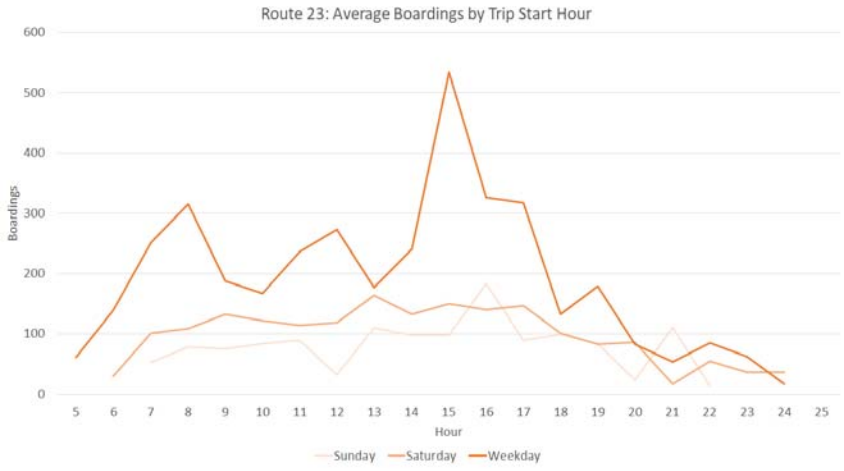
Appendix D - Usage Trends



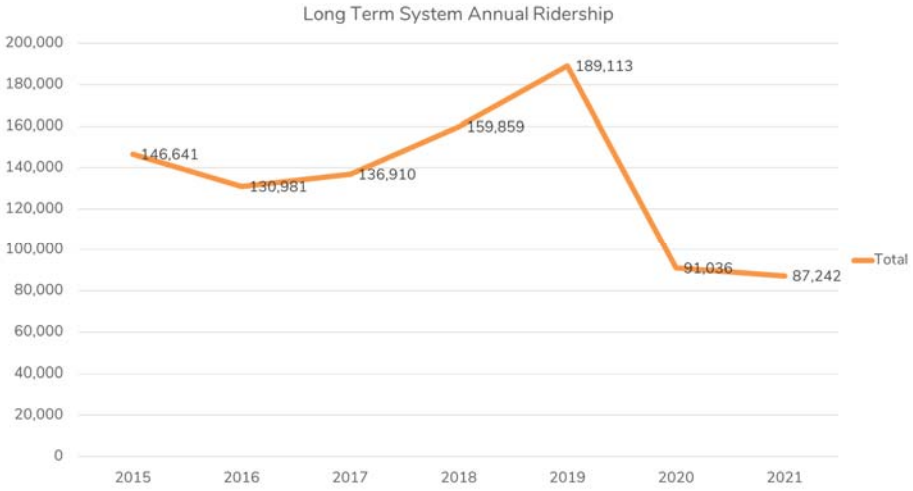

Wood Lake
District of Lake Country
Okanagan Lake
Ellison Lake
City of Kelowna
Kelowna International Airport
University of British Columbia - Okanagan
Municipal Boundary
Current Transit Routes
Route 23
Route 23 Alternative
Route 23 Bus Stop Activity
0 - 1
> 1 - 5
> 5 - 10
> 10 - 25
> 25 - 50
> 50 - 100
> 100 - 218
0
1
2 km

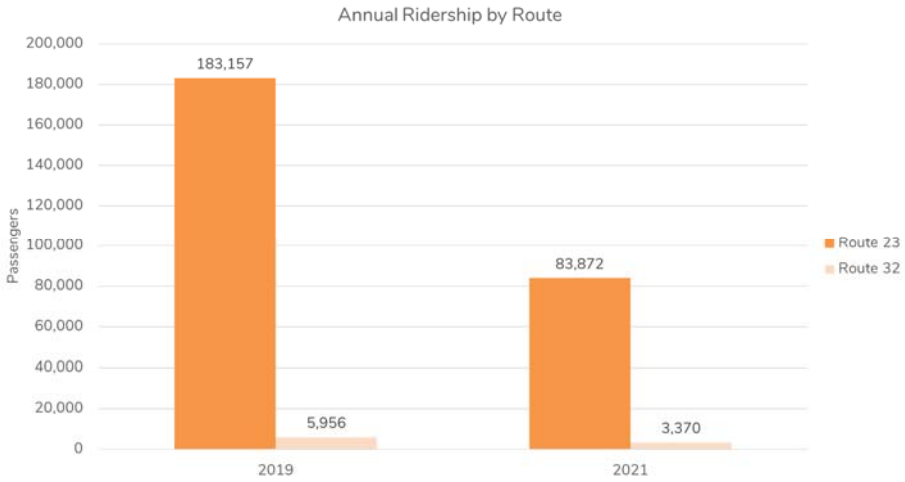

Route 23: Annual Projected Boardings by Time of Day
Boardings per Year
3,500
3,000
2,500
2,000
1,500
1,000
500
0
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Hour
2019
2021

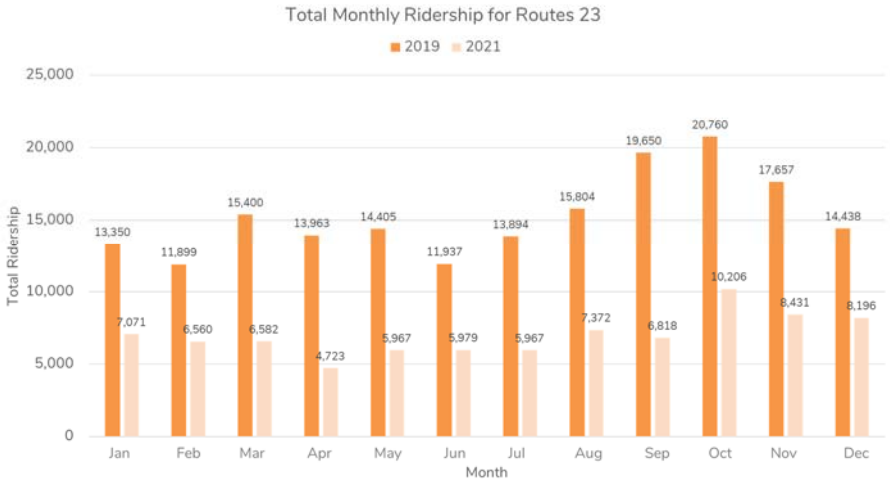

Route 32: Annual Projected Boardings by Time of Day
Boardings per Year
140
120
100
80
60
40
20
0
6 7 8 9 14 15 16 17 18
Hour
2019
2021

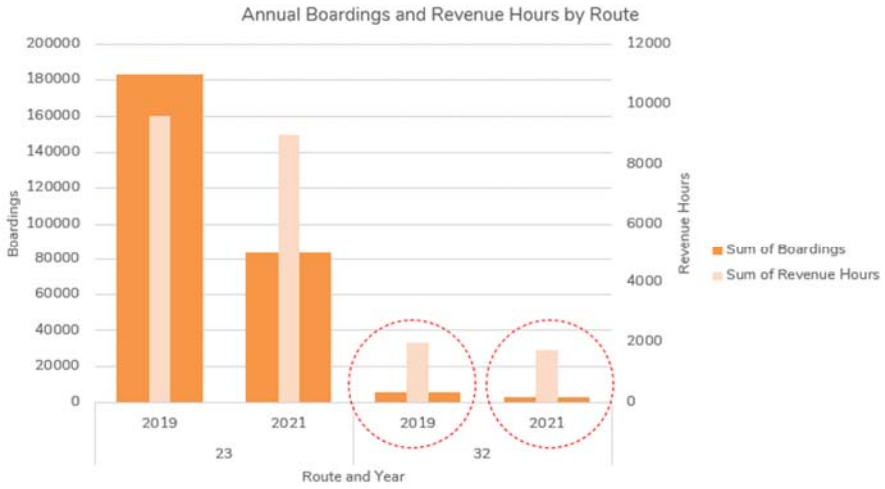

Route 23: Average Boardings by Trip Start Hour
Boardings
600
500
400
300
200
100
0
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Hour
Sunday
Saturday
Weekday

Appendix E - Ridership Trends






Total Monthly Ridership for Routes 23
2019
2021
25,000
20,000
15,000
10,000
5,000
0
Total Ridership
13,350
7,071
11,899
6,560
15,400
6,582
13,963
4,723
14,405
5,967
11,937
5,979
13,894
5,967
15,804
7,372
19,650
6,818
20,760
10,206
17,657
8,431
14,438
8,196
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month


Annual Boardings and Revenue Hours by Route
200000
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
Boardings
12000
10000
8000
6000
4000
2000
0
Revenue Hours
2019
2021
2019
2021
23
32
Route and Year
Sum of Boardings
Sum of Revenue Hours