
TO: Transit Select Committee **MEETING:** May 24, 2018

FROM: Erica Beauchamp **FILE:** 8500-03-CTE
Superintendent Transit Planning &
Scheduling

SUBJECT: Route 40-VIU Express – Service Expansion

RECOMMENDATION

That the Board approve the improvement of weekday service on Route #40 – VIU express utilizing the January 2019 5,000 Hour Annual Conventional Transit Expansion.

SUMMARY

At the December 12, 2017 Regular Board meeting, a motion to accept a 5,000 hour annual conventional transit expansion was approved. This expansion includes two CNG buses, which are on order and will be arriving by September 2018. The expansion has been included in the 2018 financial plan and the next step is to allocate the expansion hours. If the expansion hours are not allocated for implementation in January 2019, the hours will be forfeited back to BC Transit, but the two CNG buses would remain.

This 5,000 hour annual expansion to Route 40 VIU Express would increase the frequency from a variable frequency (8-20 minutes) to a predictable 10 minute frequency during morning peak hours 7:00 to 9:00 am; from a variable (12-22) frequency to every 15 minutes for the midday period (9:00 am to 4:30 pm); and from a variable (31 to 38 minute) frequency to every 30 minutes during evening operations. The full annual 5,000 hours would be utilized for this service frequency increase.

BACKGROUND

At the December 12, 2017 Regular Board Meeting, the following motion was approved:

It was moved and seconded that a 5,000 hour conventional transit annual expansion for September 2018 be approved and staff be directed to work with BC Transit to develop an implementation plan for the Board's approval.

At the April 24, 2018 Regular Board Meeting, the following motion was approved:

It was moved and seconded that the 5,000 hour annual conventional transit expansion schedule for September 2018 be referred back to staff for a more detailed study to provide service frequency improvements to Route: 40 Vancouver Island University Express.

Planning Rationale

In 2014, the Board approved the RDN *'Transit Future Plan'* creating a vision for the future of the RDN transit system and identifying transit priorities including service improvements to the frequent transit route, Route 40 VIU Express, as a short to medium term priority.

Discussions with the City of Nanaimo staff indicate that the staff are in support of an expansion to Route 40 VIU Express, this route commonly experiences crowded to overcapacity buses. Bowen Road, which is a major part of Route 40 and a major corridor within the City of Nanaimo, continues to see growth and densification around transportation mobility hubs and urban nodes. The Route 40 provides a vital link between the mobility hubs identified along Bowen Road as well as all other mobility hubs within the City of Nanaimo *'Transportation Master Plan'*, linking Downtown, Vancouver Island University (VIU), hospital area, Country Club Centre, Nanaimo North Town Centre (Rutherford area) and the Woodgrove area in the North. As viewed in Appendix 1: *'Distribution of Development within 400m of RDN transit Route 40'*, the corridors along Route 40 continue to experience residential and commercial growth, thus increasing the demand on Route 40.

A March 2018 presentation by the Nanaimo Youth Advisory Council to the Transit Select Committee, has also indicated that one of their priorities for improvements to public transportation is enhanced bus service on Route 40. The Council Representative advised that youth are one of the primary users of public transit and that increased frequency would help to solve current overcapacity issues.

VIU is another major hub for transit ridership with a significant portion of their student body utilizing transit. With VIU's discussion of increasing parking fares as well as the elimination of parking when a new building is constructed, transit ridership is expected to increase. A recent Transit Demand Management strategy (<http://sites.viu.ca/sustainability/files/2018/03/2018-01-10-Vancouver-Island-University-TDM-Strategy-Update-FINAL.pdf>) prepared by Watt Consulting for VIU strongly encourages the use of Transit Demand Management strategy measures such as a 50% increase of parking rates, and a reduction of the number of parking permits available.

Route 40 Overview

The Route 40 – VIU Express travels along a Northwest/Southeast path (see Figure 1.) and connects major hubs such as Woodgrove, VIU, Country Club Centre, Downtown Nanaimo, and Bowen and Beban Parks. This approximate 50-minute (one way) route, identified as a 'frequent travel network' route, provides travel along medium to high density and mixed land-use corridors. The service operates seven (7) days per week and accounts for approximately 40% of total ridership within the transit system, utilizing 25% of the total revenue hours. Current rides per hour on Route 40 are approximately 42 rides/hour during weekday peaks, compared to the system average of approximately 23 rides per hour. Current service for the Route 40 is roughly 6:00 am to 11:30 pm Monday to Saturday, 7:00 am to 7:30 pm on Sunday.

Figure 1. Map of Route 40 (from: Appendix 2, BC Transit: *RDN Service Expansion Proposal*)



In April 2018, the RDN collaborated with BC Transit to conduct a two phased ridership analysis, consisting of a two-week stop-level activity count project as well as an analysis of electronic farebox (GFI) data for the past six months.

Analysis of GFI data (Table 1) shows both a rise in ridership during peak morning and afternoon times, particularly centered on school bell times for Nanaimo District Secondary School (NDSS), as well as a steady ridership on Route 40 throughout the day. Table 1 represents the number of total passengers during a time span, distributed amongst the number of CNG buses on Route 40 at that time.

Table 1. Route 40 Average Inbound and Outbound Daily Rides (GFI) per time span (Appendix 2, *RDN Service Expansion Proposal*)

Time Span	Monday	Tuesday	Wednesday	Thursday	Friday
7:00 – 8:00	148.3	180.2	191.7	171.8	155.9
8:00 – 9:00	195.3	214.9	229	211.5	208.1
9:00 – 10:00	124.1	155.1	171.5	142.9	126.2
10:00 – 11:00	127.9	152.5	161.1	140.5	132.4
11:00 - 12:00	155.1	200.5	181	192.9	169.8
12:00 - 13:00	180	206.4	207.4	197.5	212.4
13:00 - 14:00	207.1	209.3	218	211.2	285.5
14:00 - 15:00	336.9	253.6	245.7	255.8	362.1
15:00 - 16:00	243.6	434.2	431.8	411.2	313.7
16:00 – 17:00	209.8	260.3	286.7	260.3	232.3
17:00 – 18:00	144.5	160.7	178	181.6	165.2
18:00 – 19:00	87.7	104	111.2	125	104.2
19:00 – 20:00	63.7	68.1	79.6	88.2	82

Over the course of two weeks in April, RDN and BC Transit conducted stop-level activity counts (on/off passenger counts at prescribed bus stops) during peak hours and found similar results to those obtained through GFI data, summarized in Tables 2 and 3. This data represents passenger counts on buses along Route 40 at the times indicated. Using the standard for determining bus capacity (numbers of seats and standees), the stop-level activity counts showed that trips during peak hours consistently experience overcapacity conditions (Table 2; for visuals, see Appendix 3) as well as crowded to near-overcapacity conditions (Table 3).

Table 2. Overcapacity (≥ 50 passengers) trips on Route 40 (Appendix 2, *RDN Service Expansion Proposal*)

Trip Time	Leave Location	Passenger Load
7:27	Woodgrove Exchange	52
7:34	Woodgrove Exchange	53
7:40	Woodgrove Exchange	51
7:40	Bowen/Kenworth Overload	53
13:55	VIU Exchange Overload	52
14:56	Prideaux Exchange	89

Table 3. Crowded (35-49 passengers) trips on Route 40 (Appendix 2, *RDN Service Expansion Proposal*)

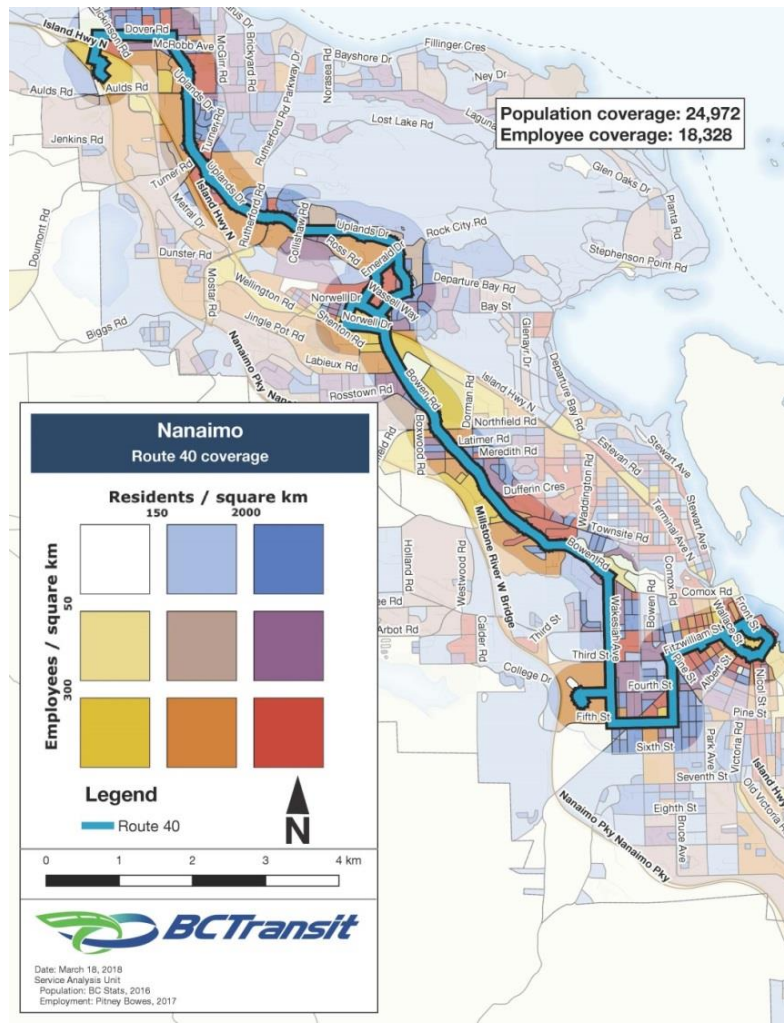
Trip Time	Leave Location	Passenger Load
7:19	Woodgrove Exchange	42
14:08	Woodgrove Exchange	42
14:45	Prideaux Exchange	45
15:10	NDSS (extra/overload run)	49
16:59	Prideaux Exchange	42

The RDN, and the City of Nanaimo, have experienced population growth of 6% (RDN) and 8% (City of Nanaimo). Projected population growth for the City of Nanaimo is 20% by the year 2031 and 32% for the RDN by 2031. This growth, combined with the increasing cost of single occupancy vehicle travel, equates to an expected increasing demand on local transit services.

Examination of Figure 2 '*Population and Employee Density along Route 40, with 400m buffer*' (*RDN Service Expansion Proposal*), indicates that along Route 40 and within 400m of the route, there are approximately 25,000 residents and 18,300 employees that are serviced. Analysis of the population and employment density data used for Figure 2 indicates that within the 400m buffer along the length of Route 40 there are upwards of 1577 residents per square km and 1157 employees per square km. As well, many areas experience mixed high residential (2000/square km) as well as high employment (300/square km) density along Route 40. Given this population data as well as the overall increase in population density within the City of Nanaimo from 918.2/km² (2011) to the current 1,266.7/km² (2016), the demand on the transit system as a whole and Route 40 in particular, is expected to continue to increase, pushing the now crowded buses into overcapacity conditions.

A key performance indicator for ideal route level performance is 40 rides per revenue hour. Currently, Route 40 averages 42 rides per hour, exceeding the indicated key performance indicator. This demonstrates the present demand on the route, which is expected to increase given the growth in population.

Figure 2: Population and Employee density within 400m of Route 40 (BC Transit: RDN Service Expansion Proposal)



Future Considerations

There are several priorities that have been identified for expansion within the RDN transit service areas. Some of the priorities that are currently being explored for future expansion hours are as follows (in no particular order):

- South Nanaimo Local Area Transit Plan
 - Public consultation process currently underway
 - Explores restructuring of transit routes in Cedar, Cinnabar, & South Nanaimo (Routes 5, 6, 7 & 30)
 - Expanded handyDART service
 - Will explore referral of routing for the Route 7
 - Next steps (after public consultation) include planning, followed by public information sessions and workshops with key stakeholder groups and community organizations

- Transit on Rutherford Rd and in Linley Valley
 - Requires public consultation and information sessions
 - This area has been experiencing growth and development
- BC Transit/RDN to explore possibility of medium duty CNG buses
 - This analysis will be conducted using data from the Automated Vehicle Location (AVL) system being installed in the current 50 CNG buses which will be going live to the public in June 2018
- Service to Duke Point ferry terminal
- Service to the Nanaimo Airport
- System wide weekend service improvements
 - Improve Saturday transit service to be 60% of weekday service (currently at 50%) and Sunday service to 40% of weekday (currently at 19%)

ALTERNATIVES

1. That the Board approve the improvement of weekday service on Route #40 – VIU express utilizing the January 2019 5,000 Hour Annual Conventional Transit Expansion.
2. Do not approve the January 2019 5,000 Hour Annual Conventional Transit Expansion and provide alternative direction.

FINANCIAL IMPLICATIONS

Implementation of the 5,000 hour annual conventional transit expansion would be achieved in January 2019.

Original approval of the service expansion was for September of 2018, which was included in the 2018 budget with a \$135,000 impact. Expansion implementation at that time would have resulted in 2000 hours in 2018 and the remaining 3000 hours in 2019. As the expansion has been delayed to 2019, the tax funds requisition from 2018 will be held in the Conventional Transit Service account as an appropriated surplus and utilized in 2019 for expansion costs. The estimated expansion cost is \$332,000, which was included in the 2018 to 2022 Financial Plan with the \$135,000 in 2018 (carried forward) and an incremental cost of \$197,000 in 2019 for the remaining expansion hours. There is no change required to the financial plan at this time, as this expansion is included in current budget plans. The 2019 to 2023 Financial Plan will be revised as needed when final 2018 results and actual expansion costs are known.

Costs are estimated and will vary depending on a number of items including fuel prices and the amount of deadhead service hours absorbed by the RDN. These requisition amounts are based on:

- No change in Custom transit hours for this purpose
- The projected 2018 usage allocations for the Southern Community Service
- The Full impact of the expansion will be realized by 2020

The Financial Plan for 2018 to 2021 includes a 5,000 hour annual conventional transit service expansion for the fall of 2018. The following table provides a preliminary estimate of costs to Southern Community Transit participants as established by “*Southern Community Transit Service Area Conversion Bylaw No. 1230, 2001*”. If there is no expansion in 2019, the requisition for 2019 would likely remain static at the 2018 amount of \$9,087,442 with some added inflation costs, which would be offset by the carry forward surplus of 2018. This estimation is pending final year end cost results.

Table 4. Estimated tax requisition allocations including 5,000 hour annual expansion. Notes: *funds collected in 2018 will be carried forward to January 2019 for expansion.*

	2018 Requisition (based on 2017 usage)	2019 Requisition (based on projected 2018 usage**)	2019 Requisition (using projected 2020 allocation split***)
Nanaimo	\$8,853,982	\$9,119,601	\$9,126,063
Lantzville	\$109,050	\$112,322	\$109,703
Electoral Area 'A'	\$114,598	\$118,036	\$114,193
Electoral Area 'C'*	\$9,812	\$10,106	\$10,106
Total	\$9,087,442	\$9,360,065	\$9,360,065


Although Electoral Area 'C' does not pay into conventional transit, in accordance with the transit allocation bylaw and Area 'C' participation in Custom transit, transit costs are apportioned based on overall transit usage

No change to allocation split in 2018 vs. 2017 due to absence of expansion in 2018

***These are preliminary estimates using 2019 requisition and estimated usage. Actual costs won't be realized until 2020 and will depend on final actual hours of service and kilometers based on developed schedule**

STRATEGIC PLAN IMPLICATIONS

This service expansion aligns with the RDN Strategic Plan Key Focus Area to 'Focus on Service and Organizational Excellence', specifically the strategic priority to "...advocate for transit improvements and active transportation". Improving and expanding transit within the service area results in greater access for the public to more sustainable transportation and economic opportunities throughout the RDN and surrounding municipalities.



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May 4, 2018

Reviewed by:

- D. Marshall, Manager, Transit Operations
- W. Idema, Director, Finance
- P. Pearce, Director, Transportation and Emergency Services
- P. Carlyle, Chief Administrative Officer

Attachments

1. Appendix 1
2. Appendix 2
3. Appendix 3