

Halifax Commuter Rail: A fresh concept

Background

Economic prosperity in the region is linked to the further development of Halifax as the regional center in Atlantic Canada. Population growth in Halifax must and will accelerate. Quality of life in Halifax is, however, negatively impacted by the lack of an efficient transportation/transit system. Implementation of a commuter rail system is necessary to achieve the economic development and quality of life goals for the city.

Commuter rail in Halifax is not a new idea:

- ▶ It was studied in 2003 and a City staff report updated the 2003 analysis in 2011
- ▶ CPCS Transcom Limited was engaged in 2014 to further study the viability of implementing and operating commuter rail in Halifax with its final report issued in August 2015

The 2015 CPCS report identified that while commuter rail is technically feasible (subject to suitable track and operating arrangements with CN) none of the operating concepts assessed would result in economic benefits that exceed the cost of implementing the service.

As noted in the CPCS report, however, “there may be opportunities to increase the viability of the project” and “the development of commuter rail service in Halifax could be considered in the context of a broader, long-term corridor development vision, supported by plans and policies to enable densification and development around commuter rail stations and reduce road traffic”.

The CPCS study was limited in scope, both in terms of corridor alternatives and ridership concepts, and the scope of the related economic benefit analysis.

The purpose of this discussion is to:

- ▶ Provide a summary of the results of the CPCS study and identify the inherent scope limitations
- ▶ Identify an alternative concept (corridor and ridership) which should be the subject of further study

CPCS Transcom Limited 2015 Study Analysis

CPCS was contracted by the HRM to produce a comprehensive feasibility study that accurately reflects the costs of implementing and operating commuter rail in Halifax.

The study involved assessing the following:

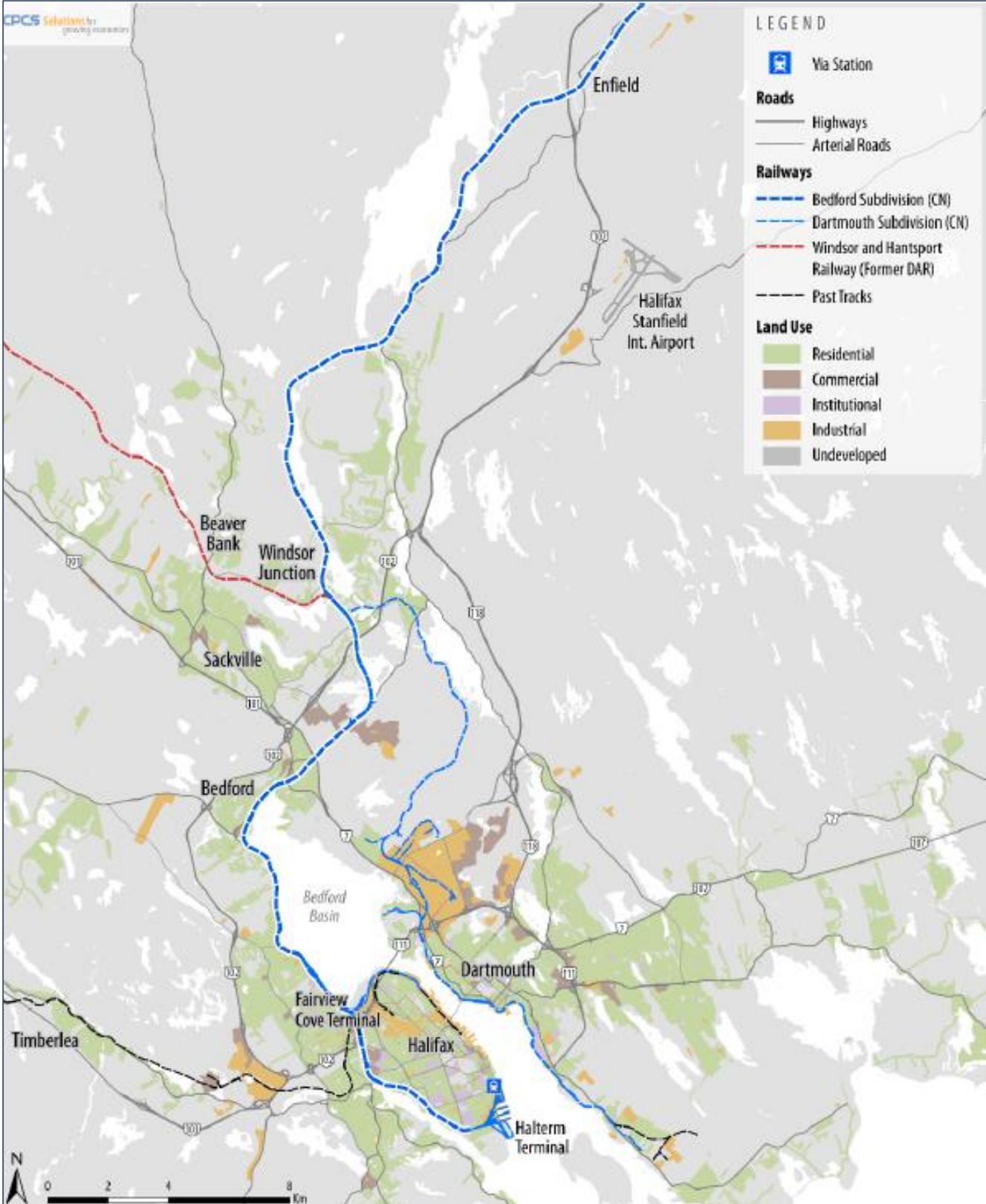
- ▶ Ridership
- ▶ Technical Feasibility
- ▶ Track Access
- ▶ Financial Affordability
- ▶ Economic Benefits

The study analyzed three potential routes including:

- ▶ Halifax to Cobequid Road (along the CN Bedford Subdivision)
- ▶ Halifax to Elmsdale (along the CN Bedford Subdivision)
- ▶ Possible extension of the above to Beaver Bank Road using the Windsor & Hansport Railway Company line

The concept assumed use of existing heavy rail lines employing diesel locomotive or diesel multiple unit (DMU) sets.

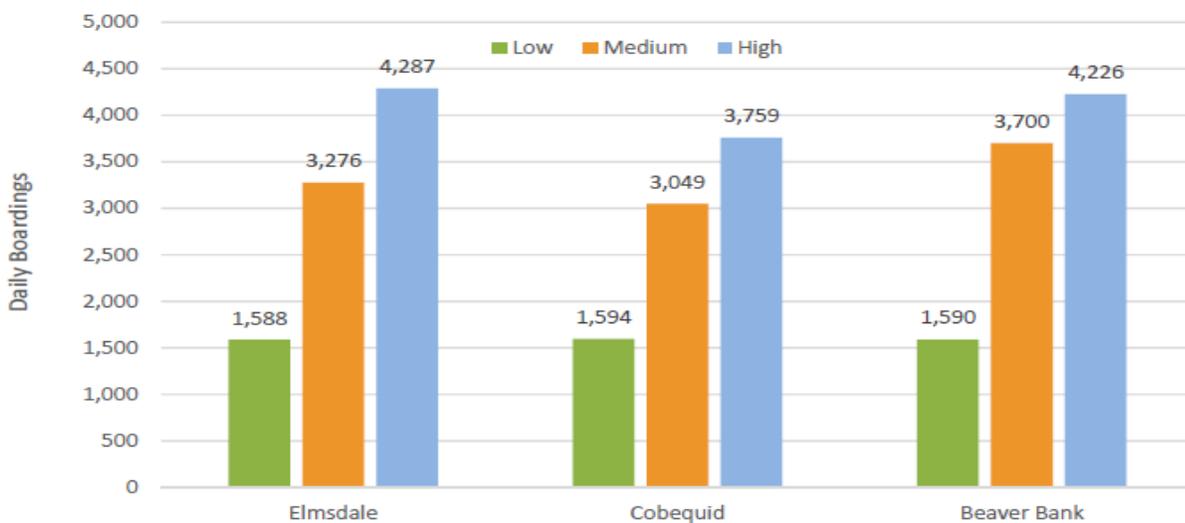
CPCS Routes



CPCS 2015 Study – Ridership

The CPCS study used the Halifax Regional Travel Demand Model as the primary tool to generate commuter rail ridership projections. Service frequency assumptions were restricted to peak period service with one mid-day trip.

The travel demand modelling suggested that the majority of commuter rail users would be comprised of travelers who would otherwise use personal vehicles – that is, demand was largely a function of commuters shifting from auto use to commuter rail use, where there is an advantage in doing so. The ridership projections are relatively low.



CPCS 2015 Study – Technical Feasibility

The CPCS study assumed the use of existing rail lines using diesel locomotive or diesel multiple unit (DMU) sets. It found that while there are no technological constraints, available capacity on the existing CN Bedford Subdivision will dictate the necessary infrastructure improvements, and hence costs to implement commuter rail service.

- ▶ Halifax-Cobequid (Windsor Junction): could be introduced with the addition of passing sidings and centralized traffic control in key areas at a relatively low cost
- ▶ Halifax-Beaver Bank: the service could be extended to Beaver Bank without prohibitive costs associated with infrastructure upgrades
- ▶ Halifax-Elmsdale: Service beyond Windsor Junction to Elmsdale was viewed as not viable (full peak period service) due to the requirement for the addition of a second main track

CPCS 2015 Study – Track Access

Track access charges would have to be negotiated with the host railway, CN. CN has indicated that a CN directed independent assessment would be required in order to determine the capital requirements to accommodate commuter rail, and that track access costs would also depend on the findings of this assessment. Track access charges represent a significant cost uncertainty.

CPCS 2015 Study – Financial Analysis

The financial analysis involved estimating capital costs, operating costs, and ridership revenue over a period of 25 years for the examined scenarios. The analysis included low, medium, and high traffic scenarios for each of the Halifax-Cobequid routes, and extending on to Beaver Bank. Halifax-Elmsdale was viewed as not viable (full peak period service) due to the requirement for the addition of a second main track.

The comparative methodology involved calculating the net present value of the above cash flows using the project owner's long term real borrowing rate as the discount rate used in the analysis (3%).

The results of the NPV analysis reflect whether revenues fully offset capital and operating costs (a positive NPV result) or whether revenues do not offset capital and operating costs (a negative NPV result).

	Cobequid			Beaver Bank		
(\$ Million)	Low	Medium	High	Low	Medium	High
Revenue	0.8	1.9	2.5	0.8	2.5	2.9
Operating Costs	9.0	10.0	10.0	9.5	10.6	10.9
Operating Loss	(8.2)	(8.1)	(7.5)	(8.7)	(8.1)	(8)
Capital Cost	36.0	48.0	50.0	40.0	54.0	62.0
NPV	(164.0)	(175.0)	(169.0)	(174.0)	(183.0)	(187.0)

The analysis reflects a cash operating loss of approximately \$8 million per year, and the net present value of the project related cash flows is between -\$164 million and -\$187 million depending on the scenario.

CPCS 2015 Study – Economic Benefits

The purpose of an economic benefit analysis is to allow decision makers to evaluate a project in terms of its economic benefits, i.e. from the societal perspective of Halifax. Jurisdictions often assess and quantify other benefits (economic or not) as a means of assessing whether the value associated with these other benefits exceeds the negative NPV arising from the financial analysis.

The scope of the CPCS study limited the assessment of economic benefits to:

- ▶ Travel time savings
- ▶ Automobile operating cost savings
- ▶ CO2 emission reductions

	Cobequid			Beaver Bank		
(\$ Million)	Low	Medium	High	Low	Medium	High
NPV from Financial Analysis	(164)	(175)	(169)	(174)	(183)	(187)
NPV of Economic Benefits:						
Travel time savings	48	36	(33)	61	63	6
Automobile cost savings	43	52	37	44	63	72
CO2 Emission Reductions (Imputed)	23	12	(1)	23	10	1
Total NPV of Economic Benefits	114	100	3	128	136	79
Total Overall NPV	(50)	(75)	(166)	(46)	(47)	(108)

Under the medium ridership scenario for Beaver Bank, the NPV of the economic benefits amount to approximately \$136 million, which does not cover the negative NPV from the financial analysis of approximately \$183 million.

CPCS Study - Inherent Scope Limitations

While the CPCS study methodology was sound, the scope of the analysis was limited, and did not encompass alternative routes, ridership concepts, or quantify additional economic benefits often included in the analysis by other jurisdictions.

▶ Routes

- ▶ The routes studied did not include Dartmouth or circumnavigate the Halifax peninsula.

▶ Ridership

- ▶ The travel demand model and related ridership assumptions assumed no material change to the current bus system.

▶ Economic Benefit Analysis

- ▶ The economic benefit analysis was restricted to travel time savings, automobile operating costs, and CO2 emission savings.

▶ Financial Analysis

- ▶ The financial analysis did not include potential sources of capital cost related funding from other levels of government.