



Halifax Commuter Rail Feasibility Study

Solutions for
growing economies

Presentation to Regional Council
Halifax Regional Municipality
October 20, 2015

Study Team

The team is led by CPCS:

**A global management consulting firm
(formerly the consulting arm of the Canadian Pacific Railway)**

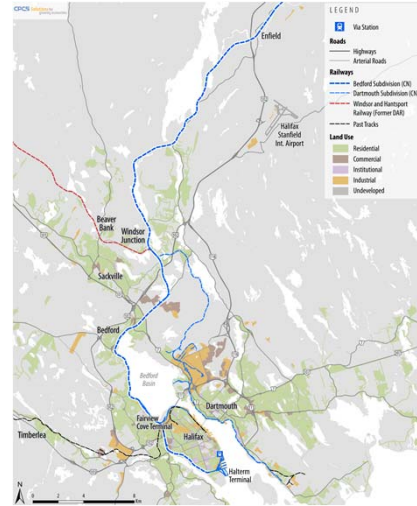
- CPCS has completed over **1,000 assignments** in more than 90 countries
 - including close to **200 assignments in Canada** and over a **dozen projects in Nova Scotia**
- Interdisciplinary team with:



Study Purpose and Goals

To produce a comprehensive feasibility study that accurately reflects the **costs** and **benefits** of implementing and operating commuter rail

- **Study area** included the CN Bedford Subdivision to Elmsdale
 - with a extension on the Windsor and Hantsport Railway to Beaver Bank
- Study included:
 - initial discussions with **CN** and other key stakeholders
 - presentation of initial results (February 2015)
- Study focused on affordable implementation options



CPCS Solutions for growing economies

Three Operating Concepts

Three operating concepts studied:

- Halifax-**Cobequid**
- Halifax-**Elmsdale**
- Halifax-**Beaver Bank**
- **All concepts** originate/end at the Halifax **VIA Rail Station**
- Final report presented results of peak-period only service with one mid-day trip

Halifax VIA Rail Station



Source: Rob LeBlanc, Ekistics

CPCS Solutions for growing economies

Three Demand Scenarios (low, medium, high)

Low Demand

- The **minimum level of infrastructure investment** required to begin operating the rail service

Medium Demand

- Potential park-and-ride lots at suburban commuter rail stations
- Direct shuttle service between commuter rail stations and key destinations



Source: Wikipedia.org

High Demand (i.e. medium demand scenario +)

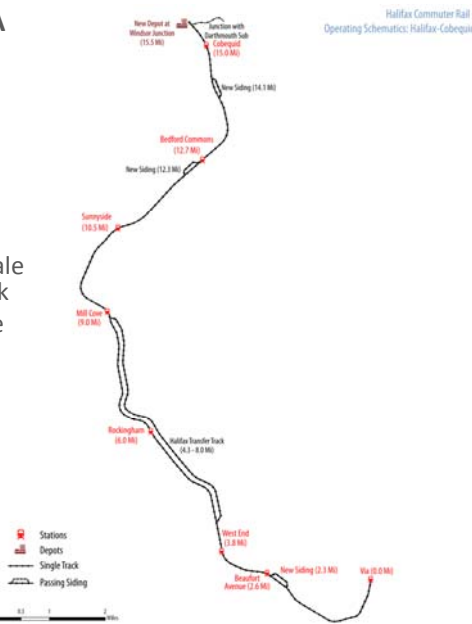
- Four new feeder shuttle services in suburban areas
- Modifications to and elimination of existing transit routes

Nine Scenarios

- Three demand scenarios (low, medium, high) for each of the three operating concepts (Hal-Cob, Hal-Elm, Hal-BB)

Existing Capacity and Infrastructure Needs

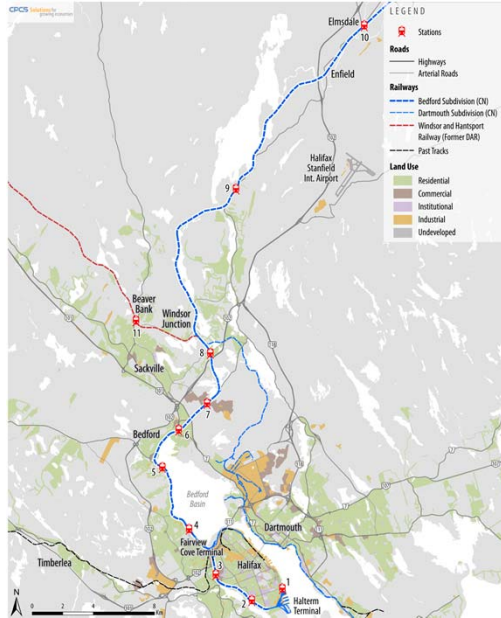
- Lighter existing rail traffic from **VIA to Cobequid**
 - New passing tracks would be required for safe and efficient rail operations
- Heavier rail traffic beyond **Cobequid/Windsor Jct**
 - Full peak-period service to Elmsdale would likely require a second track
 - It may be possible to extend some services from Cobequid
- No traffic on the **W&HR** track between **Windsor Jct and Beaver Bank**
 - Substantial track upgrades would be required



Potential Station Locations

- Studied potential stations in the following areas:
 1. VIA
 2. South End
 3. West End
 4. Rockingham
 5. Mill Cove
 6. Sunnyside
 7. Bedford Common
 8. Cobequid
 9. Wellington
 10. Elmsdale
 11. Beaver Bank
- Stations 1 through 10 along the **CN Bedford Subdivision**
- Station 11 along the **Windsor and Hantsport Railway**

CPCS Solutions for growing economies



Potential Rolling Stock / Vehicles

- Considered **six rolling stock alternatives** for the proposed commuter rail system, including
 - diesel-electric locomotive-hauled trains
 - diesel-multiple units (DMUs)
 - **New and rehabilitated alternatives**
- **Rehabilitated Budd Rail Diesel Car (RDC)** selected for further analysis
 - Likely most affordable option

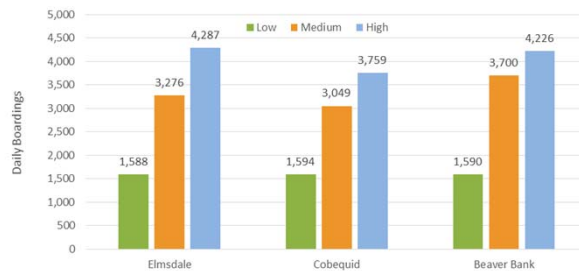


Source: Wikipedia.org

CPCS Solutions for growing economies

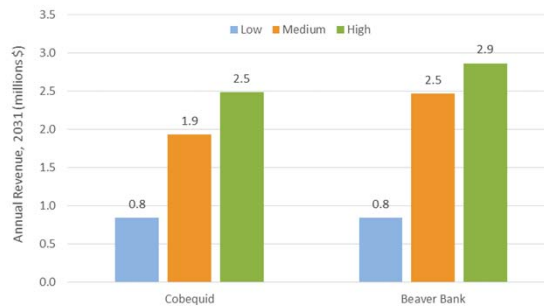
Forecasted Ridership: Total

- The **Halifax Travel Demand Model** was used to estimate commuter rail ridership
 - Outputs validated and adjusted using professional judgment and observations from similar existing services
- In 2031, we estimate there would be between 1,600 and 4,300 weekday boardings on commuter rail
 - Forecasts are based on peak-period service with one additional mid-day trip
 - Currently, total weekday boardings on Halifax Transit is 98,000 per day



Fares and Revenue Projections

- Reviewed fare structures and levels of three existing commuter rail systems in Canada
- Selected a zone fare (downtown orientation) for analysis
- In 2031, farebox revenues could range from a low of \$0.8 million per year to \$2.9 million per year



Estimated Costs

- Capital and operating cost of **Cobequid** and **Beaver Bank** concepts comparable
- Capital cost of service to **Elmsdale** over **double** that of Cobequid and Beaver Bank concepts

Expected Capital Cost

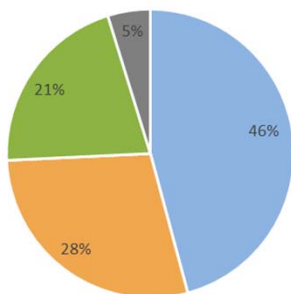


Expected Operating Cost (2018)

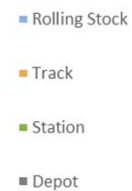
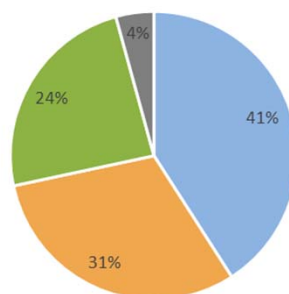


Capital Costs

Cobequid Medium Scenario



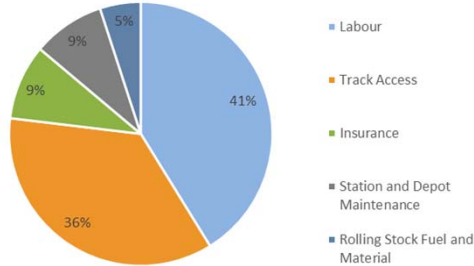
Beaver Bank Medium Scenario



- Rolling stock acquisition and rehabilitation is the largest capital cost associated with the project
- Track and station construction costs make up a larger share of capital costs in the Beaver Bank scenarios

Operating Costs

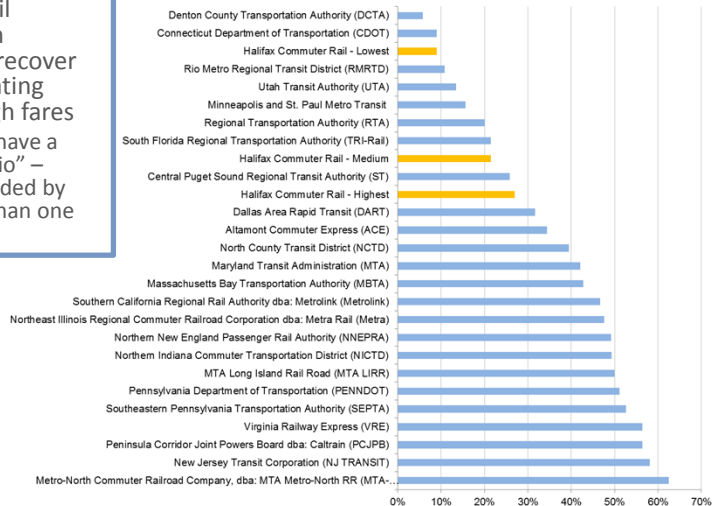
Operating Cost Breakdown: Cobequid Medium



- 45% of estimated operating costs are for track access and insurance
 - Higher degree of uncertainty
- Track access charges negotiated on a commercial basis
 - Subject to provisions of the CTA
- Basis for insurance cost is \$100m in liability insurance coverage
 - As CN indicated would be required

Financial Analysis: Recovery Ratio

All commuter rail systems in North America do not recover all of their operating expenses through fares. That is, they have a “recovery ratio” – revenues divided by costs -- less than one



Source: CPCS analysis of Federal Transit Administrations' 2011, National Transit Database (NTD), 2011.
*Includes the highest and lowest recovery ratios in the dataset.

Economic Analysis: Benefits

- The economic analysis takes the societal perspective of Halifax
- The analysis compares the potential benefits to the region to the capital and operating cost of the project
- The benefits considered include:
 - **Travel time savings:** the benefits to travelers from decreased travel time as compared to their existing commute
 - **Automobile operating cost reductions:** the benefits to travelers from taking a lower cost travel option
 - **Carbon dioxide (CO₂) emissions reductions:** the benefits from reduced CO₂ emissions

Economic Analysis

- **All scenarios studied resulted in a benefit-cost ratio (BCR) of less than 1.0**
 - Highest BCR achieved: **0.7**
 - I.e. the benefits from the project only equal 70% of the project costs
- Sensitivity analysis performed with key cost parameters (e.g. service concept, track access fees...)
 - Estimated BCR **remained** less than 1.0
- Difficult to quantify all potential benefits
 - e.g. additional transit-oriented development beyond regional plan growth

Conclusions

- Ultimately, with the assumptions considered, commuter rail in Halifax is **technically feasible** but **economically not viable**

Closing

- Thank you for involving CPCS in this study



George Kaulbeck, P.Eng.
Project Manager



Marc-André Roy
Project Director



Joel Carlson
Analyst

Commuter Rail Feasibility Study

Recommendation of the September 24, 2015 Transportation Standing Committee:

- (a) Accept the findings of the Commuter Rail Feasibility Study;
- (b) Direct staff to undertake a process to integrate land use planning and transportation planning to develop a strategic plan specifically aimed at increasing the modal split of sustainable forms of transportation as per the Regional Plan;
- (c) And furthermore direct staff to continue consultation with CN in terms of receiving information on cost implications.

HALIFAX
TRANSIT