Smoky River Transit Case

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Anne Minter watched from her office window as the line of grey clouds on the horizon receded, and let her breathing relax. Transit operations wouldn't be affected by another spring hailstorm, at least not today. As CFO of Smoky River Transit for the past two years, Anne had already seen what unexpected severe weather could do to operations and to her budget. She realized that wild swings in temperature, unpredictable downpours, and their impacts on service delivery and equipment, were becoming common enough that it was time to take climate change into account in the agency's financial planning. At the most recent meeting of Smoky River's enterprise risk management team, the Director of Operations had said that climate change would be an explicit factor in planning their new light rail line. Anne wanted to come prepared for the next ERM meeting with a systematic assessment of the financial implications of climate change for the agency. She took one more long look out the window and then got down to work.

Operations

Smoky River Transit (SRT) is a Municipal Transit Agency, providing transit service in the neighbouring cities of Newcastle and Wellington.

SRT operates conventional buses on more than 50 routes; an express bus network of 5 bus routes; and a 21 km light rail line with 20 stops. In addition, SRT operates door-to-door transit service for riders with disabilities using specialized wheelchair vehicles.

SRT was formed in 1995. Its vehicles cover more than 16 million kilometres every year. Current ridership is approximately 18.3 million rides per year and is expected to grow on average at 4.2 percent per year over the next five years. SRT is very proud of its ability to maintain high levels of service reliability over the past five years and to maintain a customer satisfaction rating of 85 percent over this same period.

SRT's fleet consists of more than 250 buses and 35 specialized wheelchair vehicles. It has more than 2,500 stops across its network, and more than 560 bus shelters.

SRT has two Operations and Maintenance facilities currently with a third one under construction. SRT also has two main transit terminals and several satellite transit terminals.

All SRT's conventional buses are fully accessible "kneeling" buses with low floors and wheelchair ramps purchased over the last nine years with a service life capacity of 12 to 15 years. A majority of the buses operate on diesel fuel. SRT has started purchasing electric buses and 5 percent of its fleet is now electric. The wheelchair buses are smaller 19-seat vehicles which are fully accessible and equipped with a lift and wheelchair spaces. The 35 wheelchair buses where purchased over the last 10 years and have a useful life of 12 years.

SRT also operates five express bus routes that provide frequent, limited-stop service along the major corridors in two cities and are linked to the light rail system.

SRT's service was expanded 5 years ago with the construction of the light rail line that serves the downtown core of the two cities and links several high transit demand institutions in the two cities including the university, college, shopping centres, city halls and regional offices and two hospitals.

The light rail line operates in a dedicated laneway with elongated electric vehicles powered through an overhead catenary system. The current service life of the light rail corridor is 50 years with the light rail vehicles and signalling systems having a useful life of 10 to15 years.

There are plans approved to create a second light rail line to replace one of the current express bus routes whose demand is now exceeding its current capacity. The initial design and property purchase have started for this line. As part of the environmental assessment for this line, SRT must prepare a design and plan that takes into consideration possible flooding of a portion of the proposed plan.

Since coming into operation, the light rail line has experienced some of the following conditions:

- Last summer included two weeks in late July where the average daily temperature exceeded 36 degrees Celsius. Track inspection identified possible warping of the rails as a result of the extreme heat;
- An ice storm in the first year of operation knocked down one of the light rail catenary lines shutting down the system for 4 hours;
- The line traverses a local park. In the fall the leaves from the trees have fallen onto the rails creating a jelly like substance that impacts the ability of the vehicles to gain any propulsion on the tracks;
- During a particularly cold week a number of switches in the yard froze up, delaying morning service for about 3 hours; and
- The municipal hydro company lost power for 10 hours last fall. The system had to be shut down after an hour as the emergency batteries ran out.

There was a major flooding incident two summers ago with an unprecedented rainfall event that recorded the highest daily total in 63 years. More than 120 mm of rain (equivalent to approximately 1.5 months of normal summer rainfall) fell in the span of three hours across SRT's service area. This followed 40mm of rainfall two days prior to the storm. The extreme rainfall was not predicted by weather forecasts – these had called for 5 to 10 mm of rainfall over the area.

The unforeseen and extreme rainfall event adversely affected SRT operations. Minor flooding was experienced on more than thirty percent of the bus routes in the region, significantly affecting service on these routes. The light rail line crosses two of the rivers in the region and water levels got close to flooding the line during the height of the storm.

Business Considerations

Key issues and priorities:

- Continued integration of regular and express bus services with the light rail service, to ensure a seamless customer experience.
- Providing frequent, up-to-date travel information, such as actual bus arrival times, service delays and route detours.
- Improving service delivery and continuing to increase ridership while becoming more cost efficient.

Base Budget Drivers & Significant Budget Challenges:

- Revenue sources: SRT obtains most of its funding from a property tax levy. It recovers 31 percent of its operating expenses from rider fares. SRT needs to establish a sustainable funding strategy for future bus replacements.
- Growing customer and community service expectations: customers and community are calling for more accessible vehicles and express routes to meet demand.
- Cost of service expansion: to meet both existing demand and to increase ridership.
- Sensitivity to diesel fuel costs: a one cent fluctuation in fuel pricing translates to approximately $90,000 annually for SRT.
- Increasing operational expenditures: costs to clear snow and maintain cleanliness at transit stops are rising.

Questions

1. **Risk**
   Does climate change pose significant risks to Smoky River Transit in the short term, longer term?

2. **Possible financial impacts**
   What financial impacts might arise from these risks?

3. **Planning**
   What should Anne consider, from a climate change perspective, in capital and operational budgeting for the proposed second light rail line?

Smoky River Transit Budget

($000's, except FTEs)

Description	Last Yr. Actual	Last Yr. Budget	Requirement (See Notes)	Final Budget
Expenses				
Salaries & Benefits	72,890	74,560	B1 850	75,410
Fuel	9,870	10,675	B2 120	10,795
Material & Supplies	5,640	5,345		5,345
Other	33,545	34,120		34,120
Maintenance & Repairs	4,230	4,370	B3 485	4,855
Administration	8,250	8,640	B4 125	8,765
Total Operating Expenses	134,425	137,710		139,290
Interest	5,600	5,720		5,720
Amortization	67,345	67,265		67,265
Total Expenses	205,370	210,695		212,275
Revenues				
Passenger Fares	41,420	35,650		43,180
Government Grants	10,945	12,295		12,295
Advertising & Other	1,295	1,875		1,875
Total Revenues	53,660	57,350		57,350
Property Tax Levy	151,710	153,345		154,925
Headcount: Full Time Equivalents (FTEs)				
Permanent	705	705	35	740
Temporary	15	15	3	18

Notes

B1 - Compensation costs per contracts / estimates. Includes annualization of 25.0 FTE's for conventional service expansion and 10.0 FTE's for express route expansion.

B2 - Includes fuel costs related to service expansion partially offset by a volume reduction.

B3 - Increases for vehicle repair costs related to the impact of additional salt used on municipal roads as a result of increased freezing rain incidents over the past five years.

B4 - Increase due mainly to additional costs related to software/hardware licences and an increase in business interruption and flood insurance.

B5 - Increase in debt servicing costs related to debentures issued to fund voice radio infrastructure and to expand bus fleet

B6- Passenger revenue includes annualization of service expansion and prior year fare increase along with approved service improvements. No general fare increase is proposed for current year.

B7- Passenger revenue is expected to be maintained on a cost recovery basis of 31 percent of operating expenses excluding interest expense and amortization) consistent with prior year and public sector transit practices.

B8- Increase in staff complement associated with service expansion of conventional, express and wheelchair services.

Smoky River Transit – Tangible Capital

($000s)

Description	Original Cost	Additions	Disposals	Amortization	Opening Accumulated Amortization	Net Book Value
Land	95,805	4,575			-	100,380
Land Improv.	146,890	13,980		4,595	80,350	75,925
Buildings	598,765	14,590		15,350	299,340	298,665
Technology, Machinery and Equipment	136,745	3,450	560	17,450	89,565	32,620
Vehicles	187,985	14,895	2,455	16,700	150,875	32,850
Light Rail Line	635,765	22,870		13,170	87,555	557,910
Total	1,801,955	74,360	3,015	67,265	707,685	1,098,350

Tangible capital assets are recorded at cost, which includes all amounts that are directly attributable to acquisition, construction, development or betterment of the asset. The cost, less residual value, of tangible capital assets is amortized on a straight-line basis over estimated lives as follows:

- Land Improvements 10 to 75 years
- Buildings 15 to 60 years
- Vehicles 3 to 15 years
- Technology, Machinery and Equipment 2 to 10 years
- Light Rail Line 50 years

Current Year Additions

Property Acquisition (4,575) – For second light rail line.

Land Improvements (9,500) – For the new storage/maintenance facility, terminal upgrades, and other improvements to express and light rail corridors.

Buildings (8,220) – Includes construction costs for the new stores/maintenance facility.

Technology, Machinery & Equipment (3,450) – Includes upgrading bus operating systems to WIFI and other software/ hardware.

Vehicles (14,895) – Includes vehicle replacements for conventional, express and wheelchair services. 35 older designed diesel bus and replaced with new electric buses.

Light Rail Line (22,870) – Includes access improvements to the light rail line to better integrate it with the conventional and express services and design costs associated with the second light rail line.

Additional Resources

Other sources of information to support this case can be found at:

- https://www.cpacanada.ca/en/business-and-accounting-resources/other-general-business-topics/sustainability/publications/translink-climate-change-case-study-2
- https://www.c40knowledgehub.org/s/article/Reducing-climate-change-impacts-on-mass-transit?language=en_US
- www.metrolinx.com/en/aboutus/sustainability/Planning_for_Resiliency_2017_EN_final.pdf
- www.metrolinx.com/en/aboutus/sustainability/MX%20Climat%20Adapt_Str_May8_vs4.pdf
- http://blog.morrisonhershfield.com/insights/the-benefits-of-climate-vulnerability-assessments-for-transit-infrastructure
- http://prairieclimatecentre.ca/wp-content/uploads/2017/04/pcc-brief-climate-resilient-city-transportation-infrastructure.pdf.
- https://climatechangeconnection.org/solutions/transportation/public-transportation/
- https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_711917/lang--en/index.htm
- https://www.canada.ca/en/impact-assessment-agency/services/environmental-assessments/basics-environmental-assessment.html