

# City of Greater Sudbury Transit Service Review and Fare Collection Strategy

ENTRA Consultants/Gooderham Group  
Council Presentation

Wednesday, February 15, 2005

*The Gooderham  
Group*



# Transit Service Plan

- Service Standards
- Review of Existing Services
- Service Strategies
- Capital and Operating Plan
- MTO Reporting for Ridership Growth Strategy and Asset Management Plan

# Fare Collection Review

- Needs Assessment
- Functional Requirements
- Business Case Analysis

# Transit Service Issues

- Commuter services
- Student Market and U-pass
- Employer market
- Ridership growth and performance

# Service Standards

- Performance Standards
  - Urban and commuter standard: boardings/hour
  - System monitoring targets: 30-34 pass/capita
- Service Design Standards
  - Service area
  - Service hours
  - Walking distance and coverage
  - TransCab service
  - New services
- Service Review Process
  - Consistent process for annual review
  - Linked to budget process

# Existing Service Review

- examined the existing routes
- applied the recommended service standards to identify necessary immediate improvements and opportunities for structural change in the short- and medium-term
- elimination of 1 evening trip on Route 701 – Lively;
- elimination of 1 evening trip on Route 103 – Coniston;
- restructuring of Route 141/142 to a local route connecting at New Sudbury Centre ;
- close monitoring of Route 12 – McKim;
- service frequency increases in major corridors; and
- restructuring to provide more frequent direct service on routes in New Sudbury.

# Greater Sudbury Transit

# Performance Summary

## Ridership Growth Strategy, Asset Management Plan and Fare Collection Strategy



Route #	Route Name	AM Peak	AM Offpeak	PM Peak	PM Offpeak	Weekday	Sat	Sun	Boardings per Hour	Revenue Pass. per Hour
181	Paris/LoEllen	91.7	84.0	80.4	35.5	72.6	61.0		71.1	59.8
301	LaSalle/Madison	101.7	69.1	85.6	39.0	69.3	49.6		66.0	57.3
182	Ramsey View/Algonquin	91.3	89.9	49.7	30.6	63.3	39.7		60.3	52.4
302	LaSalle/Cambrian	99.1	67.9	65.9	30.0	64.4	39.2		60.2	55.0
401	Barrydowne/Cambrian	79.1	59.7	62.1	28.7	55.8	35.3		53.2	45.5
017	Donovan	94.3	49.3	60.9	36.3	57.2	25.3		51.9	44.0
501	Regent/University	96.8	50.1	53.7	28.7	53.0	29.4		49.1	45.7
014	Kathleen/College Boreal	55.9	64.5	46.8	33.7	52.8	25.6		49.0	43.1
500	University/via Paris	100.7	43.4	48.6	8.8	48.9			48.9	42.2
006	West End	58.7	44.5	52.1	36.5	46.8	32.5		44.4	36.3
002	Second Avenue/Shopping Centre	55.9	35.7	45.6	18.7	38.4	27.2		36.5	32.6
940	Gatchell/Copper Cliff	50.6	38.1	32.5	24.6	36.4	28.3		35.5	30.7
819	Copper/Four Corners	43.1	40.7	27.5	17.3	32.7	27.9		32.1	28.5
101	Howey/Moonlight	48.0	40.7	26.4	19.4	33.1	19.7		30.9	26.7
102	Third Avenue/Moonlight	51.9	1.4	18.2	0.0	22.9			22.9	20.0
012	McKim	37.8	15.6	29.6	2.7	17.9	9.8		16.6	14.6
007	North End	31.5	18.9	17.9	10.0	18.0	8.0		16.3	14.7
141	Westmount/Shopping Centre	12.1				12.1			12.1	11.3
142	Grandview/Shopping Centre			11.5		11.5			11.5	10.1
		69.4	51.2	48.7	26.3	48.8	32.5		46.6	40.8
702	Azilda/Chelmsford	74.4	50.4	52.8	13.8	41.1	26.8	15.6	36.9	31.7
703	Capreol/Hanmer/Val Caron	64.5	36.3	44.5	17.1	35.0	23.6	20.4	32.2	28.7
303	Garson/Falconbridge	57.5	24.6	27.7	10.4	25.2	27.0	15.0	24.2	20.2
704	Bleazard/Elmview	33.6	16.9	11.6	8.5	14.8	12.4		14.5	13.0
103	Coniston	26.3	13.6	15.7	7.4	13.7	3.5	12.0	12.6	10.4
701	Lively	17.5	15.1	10.4	5.7	10.6	6.6	6.2	9.5	8.1
		50.5	26.8	29.5	11.5	25.2	17.6	13.7	23.2	20.2
300	LaSalle/Madison/Cambrian				25.6	25.6	34.9	45.1	35.0	30.2
241	Howey/Moonlight/Shopping Centre				2.3	2.3	9.6	54.4	26.7	23.2
502	Regent/University/Four Corners				19.4	19.4	6.8	32.7	24.0	21.0
147	Donovan/Kathleen/North End				17.6	17.6	10.9	26.3	20.7	18.0
640	West End/Gatchell/Copper Cliff				15.0	15.0	9.8	23.8	18.1	14.3
189	LoEllen/Copper/Four Corners				7.5	7.5	5.3	31.7	17.7	15.2
					14.6	14.6	12.9	36.1	23.7	20.4
400	Cambrian Express									
015	Taxation Express									
	<b>TOTALS</b>	<b>66.3</b>	<b>47.6</b>	<b>45.2</b>	<b>20.7</b>	<b>43.0</b>	<b>28.7</b>	<b>27.5</b>	<b>40.5</b>	<b>35.3</b>

# Ridership Growth Strategies

- Urban Routes
  - Non-downtown route
  - New Sudbury corridor enhancements
- Commuter Routes
  - 9-trip standard
  - Support urban routes
- TransCab
  - Continue and monitor
  - Eliminate \$2.00 premium
- Evening and Sunday
  - Medium term evening service increases
  - Business partnership opportunities
- Fares
  - U-Pass
    - Additional revenue to support service increases
  - Other Fare Strategies
    - Transferable pass
    - Open transfer
- Technology
- Other features



# Short-Term Service Improvements

- Frequency improvements
  - Route 500 to 10-minutes in peak periods
  - Route 401 to 10-minutes in peak periods
  - Route 14 to 15-minutes in peak periods
  - Route 501 to 15-minutes in peak periods
- New Services
  - Pilot for local service in Valley East
  - Hanmer initially
  - Chelmsford in second phase
  - Airport service does not meet standards

# Greater Sudbury Transit

## Ridership Growth Strategy, Asset Management Plan

## and Fare Collection Strategy



# Financial Summary -1

	2006	2007	2008	2009	2010
<b>Existing Budget Provision (1)</b>	<b>16,500,000</b>	<b>17,700,000</b>	<b>18,500,000</b>	<b>19,750,000</b>	<b>21,000,000</b>
<b>Incremental Budget Provision(2):</b>					
<b>Existing Service Review</b>	(45,000)	(45,000)	(45,000)	(45,000)	(45,000)
<b>Urban Routes</b>	-	1,200,000	1,750,000	1,750,000	1,750,000
<b>Commuter Routes</b>	40,000	40,000	40,000	40,000	40,000
<b>New Service</b>	-	-	275,000	275,000	275,000
<b>TransCab Contract Additions</b>	-	25,000	30,000	35,000	40,000
<b>Frequency Increases</b>	-	180,000	360,000	360,000	360,000
<b>Smartcard System (3)</b>	-	(5,000)	127,750	172,000	132,500
<b>Staff Increases</b>	30,000	60,000	60,000	60,000	60,000
<b>Incremental Operating Cost</b>	<b>25,000</b>	<b>1,455,000</b>	<b>2,597,750</b>	<b>2,647,000</b>	<b>2,612,500</b>
<b>Total Gross Operating Provision</b>	<b>16,525,000</b>	<b>19,155,000</b>	<b>21,097,750</b>	<b>22,397,000</b>	<b>23,612,500</b>
<b>Less:</b>					
<b>Operating revenue</b>					
Budgeted Revenue (1)	6,790,000	6,828,000	7,000,000	7,100,000	7,250,000
Transferable Pass	(45,000)	(45,000)	(45,000)	(45,000)	(45,000)
TransCab Premium	(35,000)	(35,000)	(35,000)	(35,000)	(35,000)
New TransCab Ridership	14,000	14,000	14,000	14,000	14,000
Revenue from New Service (4)	14,000	499,000	1,078,000	1,400,000	1,455,000
Upass(5)	-	375,000	700,000	750,000	800,000
<b>Net Operating Revenue</b>	<b>6,738,000</b>	<b>7,636,000</b>	<b>8,712,000</b>	<b>9,184,000</b>	<b>9,439,000</b>
	0.408	0.399	0.413	0.410	0.400
<b>Net Operating Costs</b>	<b>9,787,000</b>	<b>11,519,000</b>	<b>12,385,750</b>	<b>13,213,000</b>	<b>14,173,500</b>
<b>Performance Measures</b>					
Projected Ridership	4,253,000	4,763,000	5,453,000	5,738,000	5,876,000
Projected R/C	0.41	0.40	0.41	0.41	0.40
Projected Boardings per Vehicle hour	34	37	41	43	44
Projected Ridership per capita	26.9	30.0	34.1	35.8	36.4

# Greater Sudbury Transit

## Ridership Growth Strategy, Asset Management Plan and Fare Collection Strategy



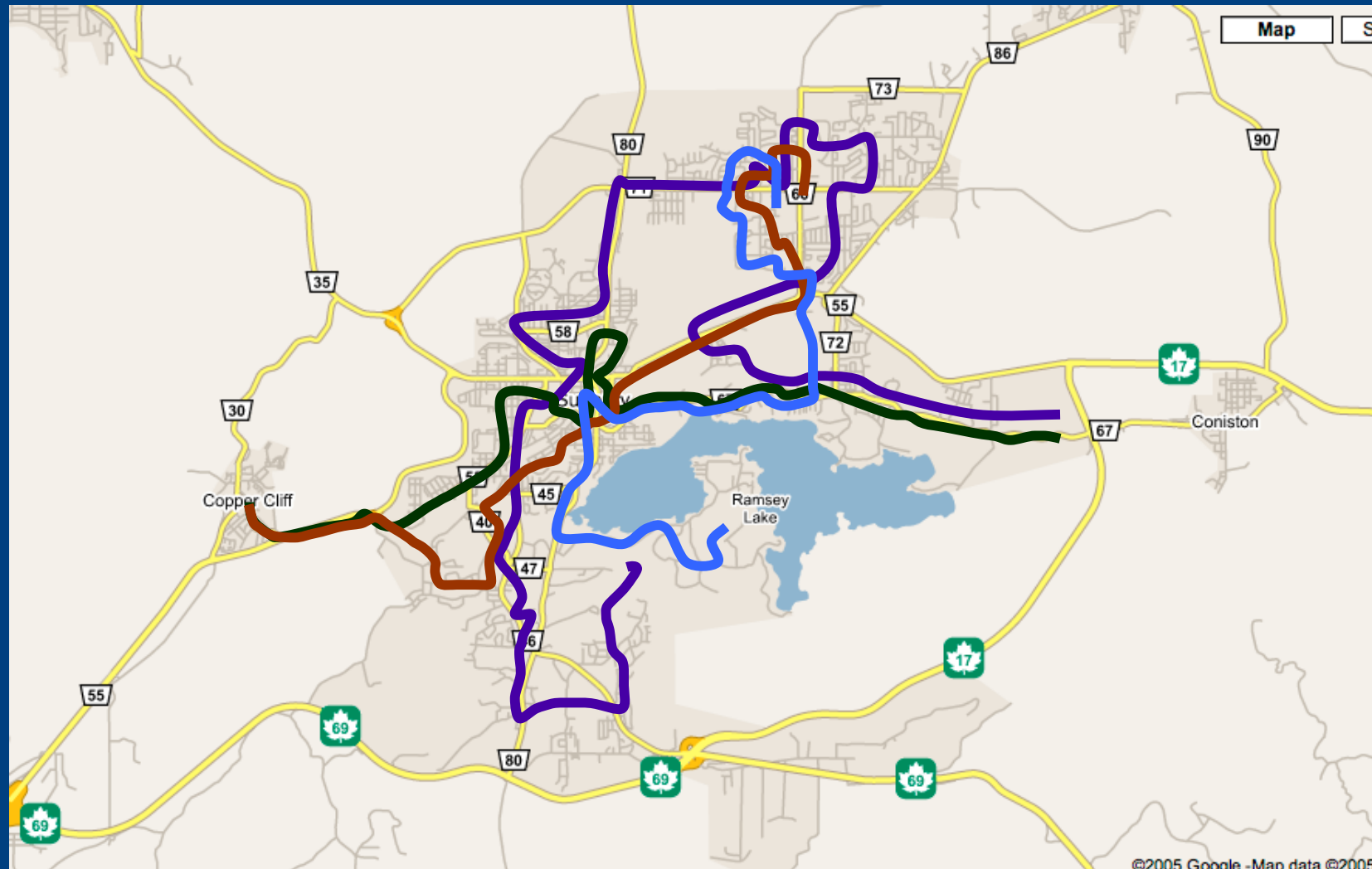
# Financial Summary - 2

	2006	2007	2008	2009	2010
<b>Capital Costs</b>					
Expansion	-	2,400,000	2,400,000	1,200,000	1,200,000
Replacement (6)	3,675,000	2,600,000	2,600,000	2,500,000	2,500,000
Refurbishing(6)	270,000	187,500	187,500	-	150,000
Fareboxes(7)	1,327,000	1,000,000	-	-	-
Service Vehicles (6)	50,000	-	50,000	-	50,000
Vehicle Hoists	80,000	-	-	-	160,000
Wash Rack/Cleaning System (6)	-	150,000	-	-	-
New garage -2012 (8)	-	-	-	-	100,000
Shelters(9)	10,000	10,000	10,000	10,000	10,000
Terminal Upgrade(9)	-	-	250,000	-	-
ITS systems(9)	-	-	-	500,000	500,000
<b>Total Capital Costs</b>	<b>5,412,000</b>	<b>6,347,500</b>	<b>5,497,500</b>	<b>4,210,000</b>	<b>4,670,000</b>
<b>Transit Funding Sources</b>					
Provincial Gas Tax Allocation (10)	(2,200,367)	(2,708,144)	(2,708,144)	(2,708,144)	(2,708,144)
Federal C48 funds	(675,000)	(675,000)	-	-	-
OTVP Capital Subsidy (11)	(1,102,500)	(780,000)	(780,000)	(750,000)	(750,000)
	-	-	-	-	-
<b>Net Capital Offsets excluding reserves)</b>	<b>(3,977,867)</b>	<b>(4,163,144)</b>	<b>(3,488,144)</b>	<b>(3,458,144)</b>	<b>(3,458,144)</b>
<b>Net Capital Cost to be funded from reserves</b>	<b>1,434,133</b>	<b>2,184,356</b>	<b>2,009,356</b>	<b>751,856</b>	<b>1,211,856</b>

# Asset Management Plan Summary

- maintaining the current vehicle replacement policy
  - after 18 years for all vehicles purchased before 1995
  - after 15 years for all newer vehicles
- spare ratio
  - 20 percent, until average age reaches 8 years
  - reduce to 15 percent to 18 percent after
- replace the existing fare collection system according to the recommendations of the fare collection feasibility study;
- replace major equipment according to existing plans
- replace the entire storage and maintenance facility in 2012
- maintain the existing effective preventive maintenance and safety program

# Long-Term Strategy



# Travel Patterns

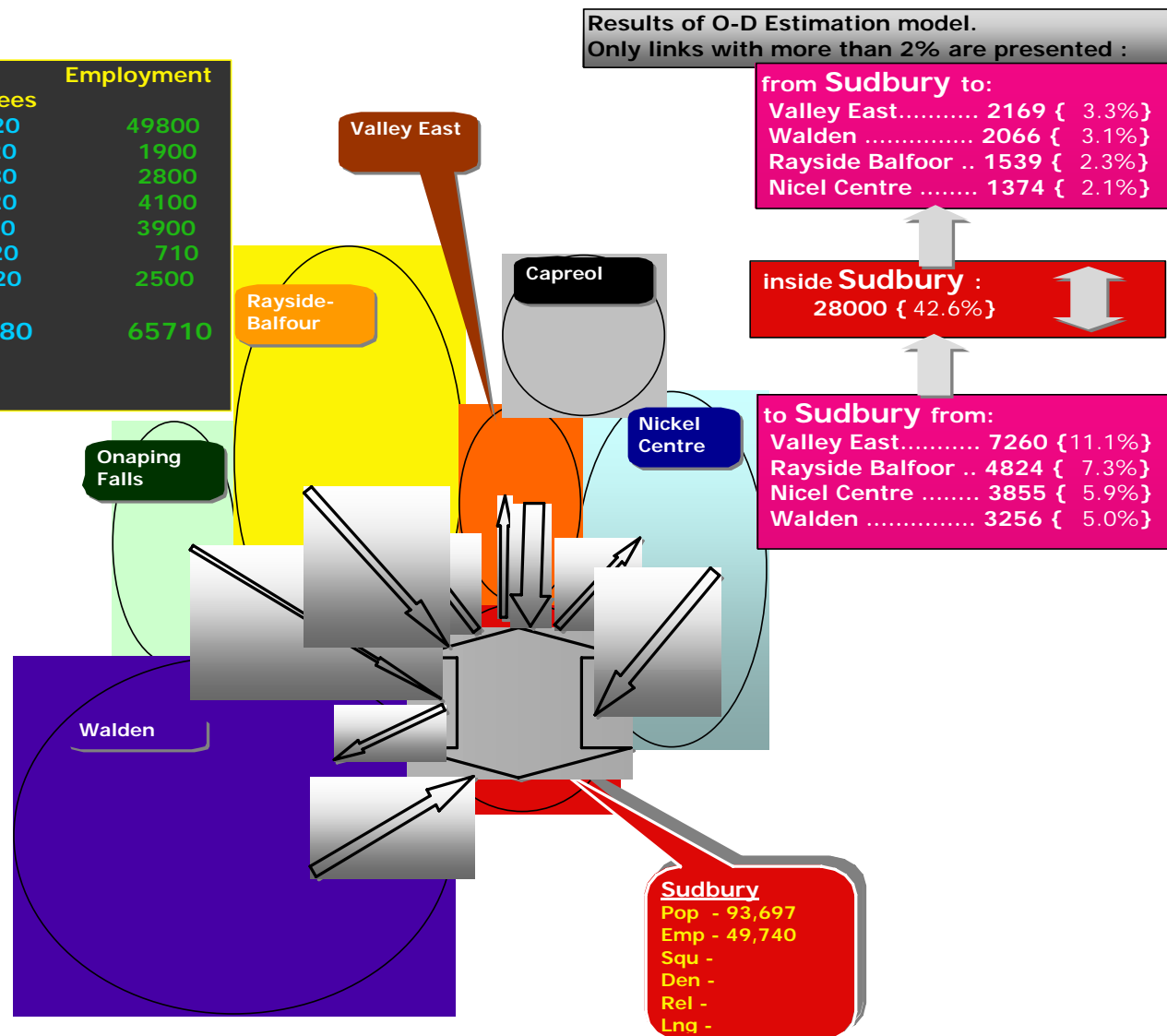
Greater  
Sudbury  
Transit

Ridership  
Growth  
Strategy,  
Asset  
Management  
Plan  
and  
Fare  
Collection  
Strategy



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Area	Poulation		Employment
	Total	Employees	
Sudbury	93700	56220	49800
Onaping Falls	5200	3120	1900
Rayside-Balfour	16300	9780	2800
Valley East	24700	14820	4100
Walden	11000	6600	3900
Capreol	3700	2220	710
Nickel Centre	13700	8220	2500
<b>Total</b>	<b>168300</b>	<b>100980</b>	<b>65710</b>



# Fare Collection Feasibility Study

- Phases of Study
  - C.1 Fare Collection Needs Assessment
    - Current system profile
    - City objectives
  - C.2 Technical and Functional Requirements
    - Sudbury Transit requirements
    - Transfer, ticket & pass technology alternatives
    - Recommendation
  - C.3 Financial Business Case and Recommendations
    - Profile each alternative scenario
    - Develop capital and operating cost estimates
    - Develop business case and NPV
    - Prepare recommendation

# Fare Collection Needs Assessment

- City Objectives
  - Replicate all current fare system functionality
  - Reduce farebox maintenance
  - Enable machine readable media to reduce disputes
  - More accurate and comprehensive information
  - Improved fare and policy flexibility
  - Affordable



# Technical and Functional Req'ts

- Sudbury Transit's Functional Requirements
  - Required farebox capabilities
    - Register coins
    - Minimal driver and passenger intervention
    - Improved accuracy of information collected
    - Improved farebox serviceability
  - Desired farebox capabilities
    - Register banknotes
    - Read transfers and pass IDs electronically
  - Desired system capabilities
    - Ability to alter system parameters centrally
    - Ability to read transaction history on media

# Transfer Technology Alternatives

1. Paper transfers manually issued by drivers – (status quo)
2. Paper transfers automatically issued by electronic transfer issuer
3. Magnetic stripe transfer automatically issued and read by farebox
4. Smart ticket (disposable smart card) automatically issued and read by farebox

# Pass & Ticket Technology Alternatives

1. Paper tickets and plastic passes – (status quo)
2. Magnetic stripe tickets and passes
3. Smart card tickets and passes

# Technology Alternatives Recommendation

- Purchase electronic validating farebox that will:
  - Accept coins and banknotes
  - Issue and accept magnetic stripe transfers
  - Accept magnetic stripe card tickets and passes
  - Accept contactless smart card tickets and passes
- Develop detailed business case for following:
  - Magnetic stripe based tickets, passes and transfers
  - Contactless smart card tickets, passes and magnetic transfers

# Electronic Validating Farebox Vendors

- GFI – Genfare
- Scheidt & Bachmann
- Fare Logistics
- Cubic Transportation Systems

# Capital & One-Time Costs

- Costs common to both alternatives – farebox \$1,791,500
- Costs unique to magnetic ticketing alternative \$125,000
- Total costs for magnetic ticketing alternative **\$1,916,500**
- Costs unique to smart card ticketing alternative \$364,000
- Total costs for smart card ticketing alternative **\$2,155,500**

# Operating Cost Assumptions

- 4M revenue passengers making 4.5M total boardings and generating \$6.5M in operating revenues
- Cost of capital – 5%
- Amortization period for fareboxes and equipment – 12 years
- Transfer fraud rate – 6%
- Adult, senior and disabled pass fraud rate – 0.9%
- Student pass fraud rate – 4%

# Annual Operating Costs

- Current annual operating cost **\$356,450**
- Annual operating cost – magnetic ticketing alternative **\$371,180**
- Annual ‘revenues’ - magnetic ticketing alternative **\$46,500**
- Annual operating cost - smart card ticketing alternative **\$456,040**
- Annual ‘revenues’ – smart card ticketing alternative **\$138,550**
- Annual ‘revenues’ – year three **\$182,651**



# Business Case Quantitative Results

Summary Financial Implication	Magnetic Ticketing	Smart Card Ticketing
Capital and One-Time Costs	\$2,064,150	\$2,327,050
Increased Operating Costs (Savings)	\$5,819	\$50,179
Increased Operating Revenues	\$46,500	\$138,550

# Business Case Quantitative Results

Summary Financial Implication	Magnetic Ticketing	Smart Card Ticketing
10 Year Net Present Value including farebox and garage equipment	\$(1,876,832)	\$(935,624)
10 Year Net Present Value including farebox and garage equipment	\$(218,261)	\$732,471
% Ridership Increase Required to Break Even		2.90%

# Qualitative Benefits

- **Magnetic Stripe Ticketing**
  - Eliminates transfer fraud
  - Magnetic media is relatively inexpensive
  - Modest change from current system
- **Smart Card Ticketing**
  - Eliminates transfer and pass fraud
  - Enables accurate ridership and system performance information
  - Enables enhanced fare policy and marketing flexibility
  - Enables simple addition of other applications
    - Municipal e-purse for parking or recreation services
    - Secure access to municipal services
    - Non-municipal applications like employer, campus or loyalty
  - Enhances probability of successful U-Pass referendum
  - Reduces cash in system – reduces operating costs
  - Promotes ridership growth – simple to use & loyalty
  - Supports 'mysudbury.ca' initiative – chic – quality of life

# Study Recommendations

1. Purchase new validating fareboxes
2. Implement smart cards for transit fare payment
3. Progressively use these smart cards for other municipal services
4. Progressively use these smart cards for selected non-municipal services