



Hamilton

CITY OF HAMILTON

CORPORATE SERVICES DEPARTMENT
Information Services Division

TO: Chair and Members Audit, Finance and Administration Committee	WARD(S) AFFECTED: CITY WIDE
COMMITTEE DATE: December 10, 2012	
SUBJECT/REPORT NO: Wireless Hamilton Wi-Fi Project (FCS09028(a)) (City Wide)	
SUBMITTED BY: Roberto Rossini General Manager Finance & Corporate Services Department	PREPARED BY: Filipe Janicas (905) 546-2424 ext.5705 AUTHORED BY: Fred Snelling (905) 546-2424 ext. 6059
SIGNATURE:	

RECOMMENDATION

- (a) That the Wireless Hamilton infrastructure implemented in 2007 be dismantled and all public facing Wi-Fi established through this initiative be discontinued at an estimated one-time cost of \$30,000 funded from existing capital project 2050757701;
- (b) That Wi-Fi needs for business purposes continue to be addressed when funding is available.

EXECUTIVE SUMMARY

The term Wi-Fi, used throughout this report, is the name of a popular wireless networking technology that uses radio waves to provide wireless high-speed internet and network connections. This technology makes access to the internet possible for

anyone with a Wi-Fi enabled device which includes technology such as laptops, tablets, cameras, iPads, e-readers, game consoles and smart phones.

Municipal Wi-Fi, which is often abbreviated as muni Wi-Fi, is a municipal wireless network that provides high-speed Internet access in areas of the municipality for free or at a lower cost when compared to standard broadband access fees for home use.

In 2006/2007, a number of municipalities across North America were embarking on initiatives to provide free public Wi-Fi in as much area as possible. The majority of these initiatives have been abandoned for financial reasons. A number of these same municipalities are addressing this need in numerous ways; some are partnering with private sector, some are leaving this to local business associations, some are providing it in recreation facilities but avoiding public outdoor spaces. Appendix A to report FCS09028(a) provides a status on other municipal Wi-Fi situations across Canada.

Report FCS06102, a joint submission by the City of Hamilton and FibreWired (subsidiary of Hamilton Hydro Services Inc.) to the Future Fund for \$501,103 was presented to Committee of the Whole and approved at the September 27, 2006, Council meeting. This report requested funding for the development of a Wi-Fi infrastructure in the downtown area (bordered by Barton Street, Main Street, Victoria Avenue and Queen Street – refer to Appendix D to report FCS09028(a)), as well as, five ‘hotspots’ (*high-speed public wireless internet access covering small localized areas*) in strategic locations throughout the City. This request for funding, from the Future Fund, was for the initial phase of what was expected to be a multi-phase wireless project. The drivers behind this initiative were two-fold; economic development/tourism and to bridge the digital divide by providing internet access to those that perhaps could not afford it otherwise. The approval for the initial phase was for a one year period commencing January 2008.

The initial phase, which concluded December 31, 2008, consisted of: designing the infrastructure; acquiring hardware; installing sixty-nine access points; implementing the background infrastructure and web site; and conducting specific projects for testing purposes.

The geographic coverage area for Phase 1, in hindsight, was too large an area for the number of access points funded in the proposal. This design resulted in a number of dead zones in the downtown coverage area. Also, there was no funding requested for support in the initial report for funding, therefore, the public had limited recourse when Wireless Hamilton was not functioning properly. A website, “www.wirelesshamilton.com” was created and the public could email any concerns to staff through this avenue. These issues were dealt with on a best effort support model.

The Wireless Hamilton infrastructure in Phase 1 provided minimal benefit to City staff due to the number of dead zones within the coverage area. Phase 1 did provide

wireless internet access to the public, again, the number of dead zones within the Phase 1 area made it difficult or impossible for some to connect. Those members of the public that were able to access the infrastructure found it very useful and encouraged the continuation of this venture. Public members who were unable to gain access were frustrated but were still positive on the concept of Wi-Fi accessibility in the downtown area.

A survey conducted during Phase 1 of Wireless Hamilton indicated there is a definite interest for public Wi-Fi in the downtown core - a questionnaire on Wireless Hamilton resulted in 88% of the respondents indicating public Wi-Fi was very important, 10% indicated it is somewhat important and 2% indicated it was not important at all. This survey sample was small consisting of about 120 responses to a web survey on wirelesshamilton.com.

A report outlining the results of Phase 1 (FCS09028) was presented to the Audit and Finance Committee in 2009, after the completion of Phase 1, resulting in the following five recommendations approved by Council:

- (a) That the existing wireless infrastructure be reconfigured to increase availability, usability and provide increased benefit to the City;
- (b) That staff investigate the various reconfiguration options and report back to Council;
- (c) That the components of the Wireless Hamilton infrastructure remain in place and active while alternative configurations are being investigated;
- (d) That staff be directed to investigate and identify operational savings or expenditures involved in the reconfiguration and expansion of the existing wireless infrastructure;
- (e) That staff review the wireless experience in other jurisdictions in North America to determine what can be learned from those jurisdictions as the Wireless Hamilton Wi-Fi Project proceeds.

These five recommendations from the 2009 Council Report have now been addressed and details are included in this report.

In developing this report a cross corporate focus group was formed to gather input from the various business units. A list of those involved is included in the relevant consultation section of this report. The focus group supported maintaining the provision of public facing Wi-Fi in a reconfigured manner which is included in the alternative section of this report.

There is staff support for this initiative to continue in the totally reconfigured design outlined as alternative 6. This being said, the City has numerous initiatives that are deemed corporate priorities which staff struggle to fund each year through the budget

process. Many of these corporate priorities remain unfunded through the budget process due to financial constraints.

Wi-Fi provision for public consumption is not considered a core service by staff and therefore this should not be considered a corporate priority at this time. Budgeted funding is not in place for the support of the existing infrastructure, not is there any funding in place to implement a reconfigured Wireless Hamilton design.

Alternatives for Consideration – See Page 8

FINANCIAL / STAFFING / LEGAL IMPLICATIONS (for Recommendation(s) only)

Financial:

A tender will be issued for the dismantling of the existing Wireless Hamilton infrastructure. It is not expected this cost will exceed \$30,000.

Dismantling the existing infrastructure will eliminate an on-going budget pressure of \$90,000 paid to Rogers Business Solutions annually for support and data backhaul.

Staffing: N/A.

Legal: N/A.

HISTORICAL BACKGROUND

Report FCS06102, a joint submission by the City of Hamilton and FibreWired (subsidiary of Hamilton Hydro Services Inc.) to the Future Fund for \$501,103 was presented to Committee of the Whole and approved at the September 27, 2006, Council meeting. This report was requesting funding for the development of a Wi-Fi infrastructure in the downtown area (bordered by Barton Street, Main Street, Victoria Avenue and Queen Street) as well as five ‘hotspots’ (high-speed public wireless internet access covering small localized areas) in strategic locations throughout the City. This request for funding, from the Future Fund, was for the initial phase of what was expected to be a multi-phase wireless project. The drivers behind this initiative were twofold; economic development/tourism; and to bridge the digital divide by providing internet access to those that perhaps could not afford it otherwise. The approval for the initial phase was for a one year period commencing January 2008.

The initial phase consisted of designing the infrastructure; acquiring hardware; installing sixty-nine access points; implementing the background infrastructure and website; and

conducting specific projects for testing purposes. Phase 1 was completed in December 2008.

The geographic coverage area for Phase 1, in hindsight, was too large an area for the number of access points included in the proposal. This design resulted in a number of dead zones in the downtown coverage area. There was no funding requested for support in the initial report for funding, therefore, the public had limited recourse when Wireless Hamilton was not meeting public expectations. A website, "www.wirelesshamilton.com" was created and the public could email any concerns to staff through this avenue. These issues were dealt with on a best effort support model.

Phase 1 provided wireless internet access to mobile City staff that are required to conduct business outside the office, while also providing any available capacity, as free internet access to the public in the downtown core and in the hotspot locations. Both the Hamilton Police Services and City staff ran projects during the initial phase to test the functionality, speed and reliability of the wireless infrastructure.

The Wireless Hamilton infrastructure in Phase 1 provided minimal benefit to City staff due to the number of dead zones within the coverage area. Phase 1 did provide wireless internet access to the public, again, the number of dead zones within the Phase 1 area made it difficult or impossible for some to connect. Those members of the public that were able to access the infrastructure found it very useful and encouraged the continuation of this venture. Public members who were unable to gain access were frustrated but were still positive on the concept of Wi-Fi accessibility in the downtown area.

After completing various projects during Phase 1, the Working Group was of the opinion that there was benefit to be received by providing the mobile workforce with access to the corporate network. Feedback received from members of the public who were able to connect was very positive and they expressed a desire to have this continue and perhaps expanded. The Downtown Business Improvement Association also indicated support for this initiative. The public access certainly has Economic Development and Tourism benefits; however, these benefits are difficult to place a dollar value on. The Working Group is of the opinion that the wireless technology should remain active and the benefit of wireless technology should be maximized by reconfiguring the existing network design.

After Phase 1 was completed, a report outlining the results of Phase 1 (FCS09028) was presented to the Audit and Finance Committee. This resulted in the following five recommendations being approved by Council on March 25, 2009:

- (a) That the existing wireless infrastructure be reconfigured to increase availability, usability and provide increased benefit to the City;

- (b) That staff investigate the various reconfiguration options and report back to Council;
- (c) That the components of the Wireless Hamilton infrastructure remain in place and active while alternative configurations are being investigated;
- (d) That staff be directed to investigate and identify operational savings or expenditures involved in the reconfiguration and expansion of the existing wireless infrastructure;
- (e) That staff review the wireless experience in other jurisdictions in North America to determine what can be learned from those jurisdictions as the Wireless Hamilton Wi-Fi Project proceeds.

These five recommendations from Phase 1 have now been addressed as indicated below:

Response to recommendation (a) from (FCS09028)

There were some minor configuration changes made to the infrastructure to increase availability, however, there was no funding provided for any major reconfigurations.

Response to recommendation (b) from (FCS09028)

In 2012 a focus group was formed with cross corporate representation to discuss wireless access needs for the various business units and for the public.

- The feedback from this group is included in the alternative section of this report.

Alternative configurations have been included on page 8.

Response to recommendation (c) from (FCS09028)

Wireless Hamilton, at this time, continues to provide free Wi-Fi to the public in the area originally configured for Phase 1.

Response to recommendation (d)

Savings, although they are unbudgeted, will be achieved through dismantling and discontinuing this service. Any reconfiguration will result in an increase in both capital and operating budgets and would need to be considered during the 2013 budget process.

Response to recommendation (e)

Staff have completed a review of other municipalities across Canada. In reviewing the Wi-Fi status of these municipal Wi-Fi initiatives, the majority of cities are either providing public facing Wi-Fi in arenas and community centres or are in the planning process to provide this public facing service. Of those municipalities reviewed, a smaller number are providing public facing Wi-Fi in public spaces. Local communities such as Burlington, Oakville, and Mississauga provide public facing Wi-Fi in all arenas, recreations centres and administration facilities plus in some public spaces. A table

outlining the current status of Wi-Fi in a number of Canadian municipalities is attached as Appendix A to report FCS09028(a).

Aside from the Wireless Hamilton initiative, the City has installed public facing Wi-Fi in the following city facilities:

- North Wentworth Twin Pad Arena
- Stoney Creek Recreation Centre
- Westmount Recreation Centre
- Morgan Firestone Arena
- Beasley Recreation Centre
- Valley Park Recreation Centre
- Wentworth Lodge
- Macassa Lodge
- Lister Building
- MacNab Street Transit Terminal
- Hamilton Street Railway Upper James Terminal
- All Fire Stations
- Specific areas of City Hall
- HECFI Facilities

The public facing Wi-Fi in the community centres/arenas above is a result of either new facilities being built or upgrades being conducted on existing facilities with the implementation of Wi-Fi included in the construction costs.

Wi-Fi technology was installed in a number of these locations to facilitate a business need. Some examples of this include the implementation for Transit and Hamilton Emergency Services. When the vehicles enter the transit terminal or HES station, information is downloaded to a central database, eliminating the need for manual data entry. For transit, the system also downloads information from the Presto fare collection service. At the same time, information is uploaded to the equipment on the vehicles with no staff involvement. This includes software upgrades, security patches etc. for the computers on board.

All of the above locations provide Wi-Fi to both staff and the public. The staff benefit can be realized by those staff working in a mobile manner such as the various inspectors and public health nurses. These hotspots provide a location where staff can stop in during the day with their mobile device and check emails, enter data, access the corporate network etc. without having to return to the office.

On-going requests from the various business units for the implementation of Wi-Fi in City facilities are being addressed as funding comes available. This includes additional locations inside many city facilities such as meeting rooms. These are being dealt with

in a similar manner to the previous requests from Transit, Hamilton Emergency Services and Community Service to meet an existing business need.

POLICY IMPLICATIONS

N/A.

RELEVANT CONSULTATION

Through the Information Services Working Committee (ISWC) the following cross corporate focus group was created consisting of:

Planning and Economic Development	Economic Development & Planning – Neil Everson
Planning and Economic Development	Economic Development & Planning – Norm Schleeahn
Planning and Economic Development	Economic Development & Planning – Carolyn Reid
Planning and Economic Development	Tourism – Andy Zimmerman
Planning and Economic Development	Marketing and Research – Elizabeth Konca
Planning and Economic Development	Downtown Renewal – Glen Norton
Public Works	Environment and Sustainable Infrastructure – Mike Field
Public Health	Office of the Medical Officer of Health – Ninh Tran
Community Services	Employment and Income Support – Dana Barone
Community Services	Recreation – Jill Laskey
Community Services	Local System Support – Al Horan
Hamilton Public Library	Paul Takala, Chief Librarian
Hamilton Public Library	Digital Technology – Mary Sakaluk
Corporate Services	Information Services – Cathy Poper
Corporate Services	Information Services – Josh Van Kampen

The Corporate Senior Management Team.

ANALYSIS / RATIONALE FOR RECOMMENDATION
--

Recommendation (a)

Through the focus group, there is staff support for this initiative to continue in the totally reconfigured design outlined as alternative 6. This being said, the City has numerous initiatives that are deemed corporate priorities which staff struggle to fund each year through the budget process. Many of these corporate priorities remain unfunded through the budget process due to financial constraints.

Wi-Fi provision for public consumption is not considered a core service by staff and therefore this should not be considered a corporate priority at this time. Budgeted

funding is not in place for the support of the existing infrastructure, not is there any funding in place to implement a reconfigured Wireless Hamilton design.

Recommendation (b)

Business applications for Wi-Fi technology should continue to expand as funding is available. As with Transit and HES, there was a business need with funding available for Wi-Fi that increased efficiencies and reduced staff involvement in data collection and data dissemination. When the vehicles enter the transit terminal or HES facility, information is downloaded from the vehicle to a central database, eliminating the need for manual data entry. For transit, the system also downloads information from the Presto fare collection service. At the same time, information is uploaded to the equipment on the vehicles with no staff involvement. This includes software upgrades, security patches etc. for the computers on board.

ALTERNATIVES FOR CONSIDERATION

There are a number of alternatives that were considered when planning the future look of Wireless Hamilton. These alternatives are outlined below and are not recommended.

The one-time costs and on-going operational costs are included in each alternative. Appendix C to report FCS09028(a) provides detailed costing for each site included in the various alternatives.

Alternative 1

This alternative includes:

- dismantling Wireless Hamilton as it currently exists in the downtown area and the 5 outlying public spaces;
- establishing public facing Wi-Fi hot-spots in the following public gathering spaces:
 - Gore Park
 - Jackson Square Plaza level
 - City Hall forecourt
 - Pier 7 & 8
 - Hunter GO Station
 - Pier 4 Park enhancement

There would be a cost of approximately \$30,000 to remove all access points installed for Phase 1. The cost to create the new Wi-Fi infrastructure in the downtown public spaces indicated above would be \$85,000 one time and an on-going annual cost of \$70,000 (\$25,000 payable to Rogers Business Solutions for data backhaul and \$45,000 for ½ FTE for maintenance and support).

Alternative 2

This alternative includes:

- dismantling Wireless Hamilton as it currently exists in the downtown area and the 5 outlying public spaces;
- establishing public facing Wi-Fi hot-spots in the following public gathering spaces:
 - Gore Park
 - Jackson Square Plaza level
 - City Hall forecourt
 - Pier 7 & 8
 - Hunter GO Station
 - Pier 4 Park enhancement
- updating existing outdoor public Wi-Fi in outlying areas including
 - Turner Park
 - Waterdown Memorial Park
 - Morgan Firestone Arena
 - Valley Park
 - Pier 4 Park
 -

There would be a cost of approximately \$30,000 to remove all access points installed for Phase 1. The cost to create the new Wi-Fi infrastructure in the designated downtown public spaces and the outlying parks from Phase 1 would be \$110,000 one time and an on-going annual cost of \$91,000 (\$46,000 payable to Rogers Business Solutions for data backhaul and \$45,000 for ½ FTE for maintenance and support).

Alternative 3

This alternative includes:

- dismantling Wireless Hamilton as it currently exists in the downtown area and the 5 outlying public spaces;
- establishing public facing Wi-Fi hot-spots in the following public gathering spaces:
 - Gore Park
 - Jackson Square Plaza level
 - City Hall forecourt
 - Pier 7 & 8
 - Hunter GO Station
 - Pier 4 Park enhancement
 - James Street North – King William Street to Murray Street

There would be a cost of approximately \$30,000 to remove all access points installed during Phase 1. The cost to create the new Wi-Fi infrastructure in the designated downtown public spaces would be \$160,000 one time and an on-going annual cost of \$87,000 (\$42,000 payable to Rogers Business Solutions for data backhaul and \$45,000 for ½ FTE for maintenance and support).

Alternative 4

This alternative includes:

- dismantling Wireless Hamilton as it currently exists in the downtown area and the 5 outlying public spaces;
- Implementing public facing Wi-Fi in all City community centres and arenas.

This alternative abandons public outdoor spaces but includes Wi-Fi in City facilities such as recreation centres, community centres, and arenas.

This would reduce our annual costs by an unbudgeted \$90,000. There would be a cost of approximately \$30,000 to remove all access points installed for Phase 1. The cost of implementing Wi-Fi hotspots in all recreation centres, arenas and community centres would be \$164,000 one-time. The on-going cost for this alternative will be \$45,000 for a ½ FTE for maintenance and support.

Alternative 5

This alternative includes:

- dismantling Wireless Hamilton as it currently exists in the downtown area and the 5 outlying public spaces;
- Install approximately 100 access points to provide appropriate coverage to the identical downtown geographic area as covered in Phase 1.

To provide blanket coverage of the geographic area included in Phase 1 would require approximately 100 access points at a cost of \$500,000 and an on-going annual cost of \$102,000 (\$57,000 for data backhaul and \$45,000 for ½ FTE for maintenance and support.

This alternative does not include any recreation centres, arenas nor any of the parks in the outlying areas.

Alternative 6

This alternative includes:

- dismantling Wireless Hamilton as it currently exists in the downtown area and the 5 outlying public spaces;
- establishing public facing Wi-Fi hot-spots in the following public gathering spaces:
 - Gore Park
 - Jackson Square Plaza level
 - City Hall forecourt
 - Pier 7 & 8
 - Hunter GO Station
 - Pier 4 Park enhancement
- Installing outdoor public Wi-Fi in Dundas Park (included in Phase 1 but never implemented)

- updating existing outdoor public Wi-Fi in outlying areas including
 - Turner Park
 - Waterdown Memorial Park
 - Morgan Firestone Arena
 - Valley Park
 - Pier 4 Park
- Installing outdoor public Wi-Fi on James Street North between King William Street and Murray Street
- Install Wi-Fi in all Community Centres, Recreation Centres and Arenas

This is the recommendation that was prepared by the corporate focus group and put forward to SMT by staff.

**Financial Analysis for Alternative 6:
Year 1 Costs**

Recommendation	Year 1 One-Time Cost	Year 1 Annual Operating Cost	Notes
(a) Downtown locations	\$85,000	\$25,200	Currently paying Rogers \$57,000 annually for Backhaul data services. Balance of the \$90,000 paid to Rogers is for support which will come in house as per recommendation (g)
(b) Dundas Driving Park	\$10,000	\$4,200	
(c) Outlying Public Spaces	\$25,000	\$21,000	
(d) James Street North	75,000	\$16,800	
(e) Dismantling Existing Infrastructure	\$26,000	-	Dismantling Existing Infrastructure
(f) Recreation Centres	\$163,800	-	Recreation Centres and Arenas
(h) 1 FTE for 1 year	\$90,000	-	1 FTE for 1 year only for installation and support.
(i) Marketing	\$5,000	-	Marketing & branding
Totals	\$479,000*	\$67,200	

*This 486,000 includes \$365,000 for hardware and installation. Based on a standard technology lifecycle a hardware refresh would be required in approximately a 5 year timeframe.

Annual Costs Beyond Year 1

Recommendation	Annual Operating Cost Beyond Year 1	Notes
(a) Downtown locations	\$25,200	Currently paying Rogers \$57,000 annually for Backhaul data services. Balance of the \$90,000 paid to Rogers is for
(b) Dundas Driving Park	\$4,200	
(c) Outlying Public	\$21,000	

Spaces		support which will come in house as per recommendation (g)
(d)James Street North	\$16,800	
(e)Dismantling Existing Infrastructure	\$0	Dismantling Existing Infrastructure
(f)Recreation Centres	\$0	Recreation Ctr.'s and Arenas
(h)1/2 FTE for 1 year	\$45,000	½ FTE for in-house support
Totals	\$112,200	After year 1, the operating costs are \$22,200 more than currently being paid.

This alternative would incur a one-time cost of \$479,000 (includes \$90,000 for 1 temporary FTE for a 1 year period during the implementation for design and support. In year 1 the operating costs would be \$67,200. After year 1, the annual operating costs would be \$112,000 (\$67,000 for data backhaul and 45,000 for ½ FTE for support and maintenance.

CORPORATE STRATEGIC PLAN (Linkage to Desired End Results)

Focus Areas: 1. Skilled, Innovative and Respectful Organization, 2. Financial Sustainability, 3. Intergovernmental Relationships, 4. Growing Our Economy, 5. Social Development, 6. Environmental Stewardship, 7. Healthy Community

Financial Sustainability

This initiative is not considered a corporate priority at this time. In order to attain financial sustainability it is important that we minimize the addition of new projects lacking in capital and operating funding.

APPENDICES / SCHEDULES

- Appendix A – Status of Wi-Fi in other municipalities
- Appendix B – Detail Costs for Alternatives
- Appendix C – Detail Costs for each location
- Appendix D – Map of Existing Infrastructure for Wireless Hamilton

STATUS OF WI-FI IN OTHER MUNICIPALITIES

Appendix A to report FCS09028(a) – page 1 of 3

Municipality	Municipality Funded	Privately Funded	Notes
London	Public Wi-Fi in locations such as City Hall, Convention Centre and libraries.	A not for profit group London Area Wireless Network (LAWN) have a number of sites in the downtown core providing free public Wi-Fi. Funded by the Downtown London Business Association with local business providing the internet backbone. londonlawn.ca	So popular is the not for profit network that within an hour after the first connection was made, 19 people had already used the service, before board members on a task force charged with looking at the issue even knew the installation had been complete. Averaging close to 2,000 individual users per week. Over 3,400 unique users each month.
Mississauga	Public Wi-Fi in all arenas, recreation centres, libraries and administration buildings. Some Parks also have public Wi-Fi		
Quebec City	Public Wi-Fi available in all libraries.	Zone d'Access Public (ZAP) not for profit group that provides extensive Wi-Fi coverage in public spaces.	Some funding provided by University of Sherbrooke and Bishops University. Businesses pay for the hardware and make their internet available to ZAP. Business pay \$5.00 per month for support. ZAP Quebec has created 45 free wireless access points serving more than 50,000 users. Similar to Wireless Toronto
Edmonton	Public Wi-Fi in recreation centres, arenas, libraries, city hall and some public spaces.		
Calgary	RFP to be released to have an internet provide free Wi-Fi in city facilities. The city will pay this private company for their services and make it available to the public at no cost. Currently public Wi-Fi in all libraries.	For profit group providing Wi-Fi in public spaces	Shaw cable is building an infrastructure in public spaces available at no cost for Shaw customers. Others will incur a fee.
Vancouver	Public Wi-Fi in recreation centres and libraries. Also in council chambers and the media room in city hall.	Shaw cable will be providing free public Wi-Fi to Shaw customers. Other will incur a fee.	

STATUS OF WI-FI IN OTHER MUNICIPALITIES

Appendix A to report FCS09028(a) – page 2 of 3

Ottawa	Public Wi-Fi in libraries, however, access requires user to have a library card.	Federal Capital Commission has created public Wi-Fi in the downtown core. Restricted to 15 minutes of use – meant for access to a tourism application. Ottawa-Gatineau Wi-Fi is a not for profit organization creating Wi-Fi coverage areas for public use.	
Toronto	Public Wi-Fi in libraries	OneZone provides Wi-Fi for a fee in the downtown core Wireless Toronto is a not-for profit organization offering free Wi-Fi in parks and large public spaces.	OneZone was originally owned by Toronto Hydro and now owned by Cogeco. Wireless Toronto relies on donated bandwidth from local businesses similar to London.
Greater Sudbury	Public Wi-Fi in all arenas, recreation centres, libraries and administration buildings.		
Winnipeg	Public Wi-Fi in Libraries and one pool.	Shaw Cable is providing free Wi-Fi to all customers in recreation centres, arenas and libraries	
Montreal	Public Wi-Fi available in all libraries.	Ile Sans Fil (Wireless Islands) not for profit group that provides extensive Wi-Fi coverage in public spaces. Old Port Corporation provides free Wi-Fi in the promenade. Bell provides 30 minutes of free public Wi-Fi in the downtown core.	Some municipal funding for staff to manager the volunteers. Over 250 Hot Spots in public places under branding of Ile Sans Fil
Waterloo	Public Wi-Fi Internet service is available at 18 City of Waterloo facilities and public spaces including a cemetery. Further		Waterloo had public Wi-Fi service offered for a fee by Atria Networks. This was cancelled when Rogers purchased Atria Networks. Atria Networks provided free internet in public spaces.

STATUS OF WI-FI IN OTHER MUNICIPALITIES

Appendix A to report FCS09028(a) – page 3 of 3

	expansion is planned for the balance of the recreation centres and arenas. All libraries also provide free public Wi-Fi.		
Moncton	Public Wi-Fi in large portion of the down core plus large public spaces/parks. Also available in all libraries, and arena/community centres. Moncton provides Wi-Fi on their buses also.		This is the only City I could find that provides Wi-Fi on their buses.
Oakville	Public Wi-Fi in all arenas, recreation centres, libraries and administration buildings. Some Parks also have public Wi-Fi		
Burlington	Public Wi-Fi in all arenas, recreation centres, libraries and administration buildings.		In 2006 and 2007, Burlington was named one of a select few Smart21 communities worldwide by the Intelligent Community Forum, a non-profit think tank that focuses on job creation and economic development in the broadband economy. Using Wi-Fi, Burlington can also enhance city services such as field inspections, bylaw enforcement and emergency response.
St. Catharines	Public Wi-Fi in all libraries		
Vaughan	Public Wi-Fi in all libraries.		
Brantford	Public Wi-Fi in 2 Recreation Centres/Arenas. The balance is planned for 2013.		

DETAIL COSTS FOR ALTERNATIVES

Alternative 1 – Downtown Hotspots					
Location	# of Access Points	Hardware Cost	Installation Cost	One Time Cost	Annual Operating Cost
City Hall Forecourt	2	\$8,000	\$2,000	\$10,000	\$4,200
Jackson Square Plaza	3	\$12,000	\$3,000	\$15,000	\$4,200
Gore Park	6	\$24,000	\$6,000	\$30,000	\$4,200
Hunter GO Station	2	\$8,000	\$2,000	\$10,000	\$4,200
Pier 7 & Pier 8	3	\$12,000	\$3,000	\$15,000	\$4,200
Pier 4 Expanded	1	\$4,000	\$1,000	\$5,000	\$4,200
Total	17	\$68,000	\$17,000	\$85,000	\$25,200

Alternative 2 – Downtown Hotspots and Existing Outlying Parks					
Location	# of Access Points	Hardware Cost	Installation Cost	One Time Cost	Annual Operating Cost
City Hall Forecourt	2	\$8,000	\$2,000	\$10,000	\$4,200
Jackson Square Plaza	3	\$12,000	\$3,000	\$15,000	\$4,200
Gore Park	6	\$24,000	\$6,000	\$30,000	\$4,200
Hunter GO Station	2	\$8,000	\$2,000	\$10,000	\$4,200
Pier 7 & Pier 8	3	\$12,000	\$3,000	\$15,000	\$4,200
Pier 4 Expanded	1	\$4,000	\$1,000	\$5,000	\$4,200
Turner Park	1	\$4,000	\$1,000	\$5,000	\$4,200
Pier 4 Park	1	\$4,000	\$1,000	\$5,000	\$4,200
Waterdown Memorial Park	1	\$4,000	\$1,000	\$5,000	\$4,200
Valley Park	1	\$4,000	\$1,000	\$5,000	\$4,200
Morgan Firestone Arena	1	\$4,000	\$1,000	\$5,000	\$4,200
Totals	22	\$88,000.00	\$22,000.00	\$110,000.00	\$46,200.00

Alternative 3 – Downtown Hotspots including James Street North					
Location	# of Access Points	Hardware Cost	Installation Cost	One Time Cost	Annual Operating Cost
City Hall Forecourt	2	\$8,000	\$2,000	\$10,000	\$4,200
Jackson Square	3	\$12,000	\$3,000	\$15,000	\$4,200

DETAIL COSTS FOR ALTERNATIVES

Appendix B to report FCS09028(a) – page 2 of 6

Plaza					
Gore Park	6	\$24,000	\$6,000	\$30,000	\$4,200
Hunter GO Station	2	\$8,000	\$2,000	\$10,000	\$4,200
Pier 7 & Pier 8	3	\$12,000	\$3,000	\$15,000	\$4,200
Pier 4 Expanded	1	\$4,000	\$1,000	\$5,000	\$4,200
James Street North	15	\$60,000	\$15,000	\$75,000	\$16,800
Totals		\$128,000.00	\$32,000.00	\$160,000.00	\$42,000.00

Alternative 4 – Recreation Centres, Arenas and Community Centres					
Location	# of Access Points	Hardware Cost	Installation Cost	One Time Cost	Annual Operating Cost
Ancaster Rotary Center	0	\$0.00	\$0.00	\$0.00	\$0.00
Aquatic Centre	5	\$5,500.00	\$1,500.00	\$7,000.00	\$0.00
Beasley Recreation Centre	0	\$0.00	\$0.00	\$0.00	\$0.00
Bennetto Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Beverly Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Brewster Pool	2	\$2,200.00	\$600.00	\$2,800.00	\$0.00
Carlisle Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Central Memorial Recreation Centre	4	\$4,400.00	\$1,200.00	\$5,600.00	\$0.00
Chedoke Twinpad Arena	6	\$6,600.00	\$1,800.00	\$8,400.00	\$0.00
Coronation Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Dalewood Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Dundas Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Dundas Community Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Dundas Pool	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Eastwood Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Glanbrook Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Hill Park Recreation Centre	4	\$4,400.00	\$1,200.00	\$5,600.00	\$0.00
Huntington Park	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00

DETAIL COSTS FOR ALTERNATIVES

Appendix B to report FCS09028(a) – page 3 of 6

Recreation Centre					
Inch Park Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Jimmy Thompson Pool	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Lawfield Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Mountain Arena & Skating Centre	6	\$6,600.00	\$1,800.00	\$8,400.00	\$0.00
Norman Pinky Lewis Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
North Wentworth Arena	0	\$0.00	\$0.00	\$0.00	\$0.00
Olympic Ice Rink	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Parkdale Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Riverdale Recreation Centre	4	\$4,400.00	\$1,200.00	\$5,600.00	\$0.00
Rosedale Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Ryerson Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Sackville Seniors Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Saltfleet Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
SC Arena & Recreation Complex	6	\$6,600.00	\$1,800.00	\$8,400.00	\$0.00
Scott Park Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Sir Allen MacNab Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Sir Wilfrid Laurier Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Sir Winston Churchill Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Stoney Creek Recreation Centre	0	\$0.00	\$0.00	\$0.00	\$0.00
Westmount Recreation Centre	0	\$0.00	\$0.00	\$0.00	\$0.00
Valley Park Community Centre and Arena	5	\$5,500.00	\$1,500.00	\$7,000.00	\$0.00
Total For Recreation	117	\$128,700	\$35,100.00	\$163,800	\$0.00

DETAIL COSTS FOR ALTERNATIVES

Centres					
----------------	--	--	--	--	--

Alternative 5 – Appropriate Coverage for Phase 1 geographic area					
Location	# of Access Points	Hardware Cost	Installation Cost	One Time Cost	Annual Operating Cost
Downtown Core	100	\$400,000	\$100,000	\$500,000	\$102,000
Total	100	\$400,000	\$100,000	\$500,000	\$102,000

Alternative 6 – Downtown Hot Spots, Outlying Parks, Recreation Centres, Arenas and Community Centres					
City Hall Forecourt	2	\$8,000	\$2,000	\$10,000	\$4,200
Jackson Square Plaza	3	\$12,000	\$3,000	\$15,000	\$4,200
Gore Park	6	\$24,000	\$6,000	\$30,000	\$4,200
Hunter GO Station	2	\$8,000	\$2,000	\$10,000	\$4,200
Pier 7 & Pier 8	3	\$12,000	\$3,000	\$15,000	\$4,200
Pier 4 Expanded	1	\$4,000	\$1,000	\$5,000	\$4,200
James Street North	15	\$60,000	\$15,000	\$75,000	\$16,800
Turner Park	1	\$4,000	\$1,000	\$5,000	\$4,200
Pier 4 Park	1	\$4,000	\$1,000	\$5,000	\$4,200
Waterdown Memorial Park	1	\$4,000	\$1,000	\$5,000	\$4,200
Valley Park	1	\$4,000	\$1,000	\$5,000	\$4,200
Morgan Firestone Arena	1	\$4,000	\$1,000	\$5,000	\$4,200
Ancaster Rotary Center	0	\$0.00	\$0.00	\$0.00	\$0.00
Dundas Driving Park	2	\$8,000	\$2,000	\$10,000	\$4,200
Aquatic Centre	5	\$5,500.00	\$1,500.00	\$7,000.00	\$0.00
Beasley Recreation Centre	0	\$0.00	\$0.00	\$0.00	\$0.00
Bennetto Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Beverly Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Brewster Pool	2	\$2,200.00	\$600.00	\$2,800.00	\$0.00

DETAIL COSTS FOR ALTERNATIVES

Appendix B to report FCS09028(a) – page 5 of 6

Carlisle Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Central Memorial Recreation Centre	4	\$4,400.00	\$1,200.00	\$5,600.00	\$0.00
Chedoke Twinpad Arena	6	\$6,600.00	\$1,800.00	\$8,400.00	\$0.00
Coronation Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Dalewood Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Dundas Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Dundas Community Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Dundas Pool	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Eastwood Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Glanbrook Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Hill Park Recreation Centre	4	\$4,400.00	\$1,200.00	\$5,600.00	\$0.00
Huntington Park Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Inch Park Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Jimmy Thompson Pool	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Lawfield Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Mountain Arena & Skating Centre	6	\$6,600.00	\$1,800.00	\$8,400.00	\$0.00
Norman Pinky Lewis Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
North Wentworth Arena	0	\$0.00	\$0.00	\$0.00	\$0.00
Olympic Ice Rink	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Parkdale Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Riverdale Recreation Centre	4	\$4,400.00	\$1,200.00	\$5,600.00	\$0.00
Rosedale Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Ryerson Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Sackville Seniors Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Saltfleet Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
SC Arena & Recreation	6	\$6,600.00	\$1,800.00	\$8,400.00	\$0.00

DETAIL COSTS FOR ALTERNATIVES

Appendix B to report FCS09028(a) – page 6 of 6

Complex					
Scott Park Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Sir Allen MacNab Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Sir Wilfrid Laurier Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Sir Winston Churchill Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Stoney Creek Recreation Centre	0	\$0.00	\$0.00	\$0.00	\$0.00
Westmount Recreation Centre	0	\$0.00	\$0.00	\$0.00	\$0.00
Valley Park Community Centre and Arena	5	\$5,500.00	\$1,500.00	\$7,000.00	\$0.00
Total		\$284,700.00	\$74,100.00	\$358,800.00	\$67,200.00
1 Temporary FTE for 1 year				\$90,000	
Dismantling Existing				\$26,000	
Marketing				\$5,000	
One year Capital cost				\$479,800.00	

DETAIL COSTS FOR EACH LOCATION

Appendix C to report FCS09028(a) – page 1 of 3

Downtown Space					
Downtown Outdoor Space Location	# of Access Points	Hardware Cost	Installation Cost	One Time Cost per site	Annual Data Backhaul Cost
City Hall Plaza	2	\$8,000	\$2,000	\$10,000	\$4,200
Jackson Square Plaza	3	\$12,000	\$3,000	\$15,000	\$4,200
Gore Park	6	\$24,000	\$6,000	\$30,000	\$4,200
Hunter GO Station	2	\$8,000	\$2,000	\$10,000	\$4,200
Pier 7 & Pier 8	3	\$12,000	\$3,000	\$15,000	\$4,200
Pier 4 Expanded	1	\$4,000	\$1,000	\$5,000	\$4,200
Total	17	\$68,000	\$17,000	\$85,000	\$25,200

Dundas Driving Park					
Dundas Driving Park	2	\$8,000	\$2,000	\$10,000	\$4,200
Total	2	\$8,000	\$2,000	\$10,000	\$4,200

Outlying Outdoor Space Location					
Turner Park	1	\$4,000	\$1,000	\$5,000	\$4,200
Pier 4 Park	1	\$4,000	\$1,000	\$5,000	\$4,200
Waterdown Memorial Park	1	\$4,000	\$1,000	\$5,000	\$4,200
Valley Park	1	\$4,000	\$1,000	\$5,000	\$4,200
Morgan Firestone Arena	1	\$4,000	\$1,000	\$5,000	\$4,200
Total	5	\$20,000	\$5,000	\$25,000	\$21,000

James Street North					
King William Street to Murray Street	15	\$60,000	\$15,000	\$75,000	\$16,800
Total	15	\$60,000	\$15,000	\$75,000	\$16,800

Community Centres, Arenas, Recreation Centres					
Ancaster Rotary Center	0	\$0.00	\$0.00	\$0.00	\$0.00
Aquatic Centre	5	\$5,500.00	\$1,500.00	\$7,000.00	\$0.00
Beasley Recreation Centre	0	\$0.00	\$0.00	\$0.00	\$0.00
Bennetto	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00

DETAIL COSTS FOR EACH LOCATION

Appendix C to report FCS09028(a) – page 2 of 3

Recreation Centre					
Beverly Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Brewster Pool	2	\$2,200.00	\$600.00	\$2,800.00	\$0.00
Carlisle Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Central Memorial Recreation Centre	4	\$4,400.00	\$1,200.00	\$5,600.00	\$0.00
Chedoke Twinpad Arena	6	\$6,600.00	\$1,800.00	\$8,400.00	\$0.00
Coronation Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Dalewood Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Dundas Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Dundas Community Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Dundas Pool	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Eastwood Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Glanbrook Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Hill Park Recreation Centre	4	\$4,400.00	\$1,200.00	\$5,600.00	\$0.00
Huntington Park Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Inch Park Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Jimmy Thompson Pool	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Lawfield Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Mountain Arena & Skating Centre	6	\$6,600.00	\$1,800.00	\$8,400.00	\$0.00
Norman Pinky Lewis Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
North Wentworth Arena	0	\$0.00	\$0.00	\$0.00	\$0.00
Olympic Ice Rink	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Parkdale Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Riverdale Recreation Centre	4	\$4,400.00	\$1,200.00	\$5,600.00	\$0.00
Rosedale Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Ryerson Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Sackville Seniors	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00

DETAIL COSTS FOR EACH LOCATION

Appendix C to report FCS09028(a) – page 3 of 3

Centre					
Saltfleet Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
SC Arena & Recreation Complex	6	\$6,600.00	\$1,800.00	\$8,400.00	\$0.00
Scott Park Arena	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Sir Allen MacNab Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Sir Wilfrid Laurier Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
Sir Winston Churchill Recreation Centre	3	\$3,300.00	\$900.00	\$4,200.00	\$0.00
StoneyCreek Recreation Centre	0	\$0.00	\$0.00	\$0.00	\$0.00
Westmount Recreation Centre	0	\$0.00	\$0.00	\$0.00	\$0.00
Valley Park Community Centre and Arena	5	\$5,500.00	\$1,500.00	\$7,000.00	\$0.00
Total	117	\$128,700	\$35,100.00	\$163,800	\$0.00

MAP OF EXISTING INFRASTRUCTURE FOR
WIRELESS HAMILTON

