

REPORT

Electric Utility Commission

To: Mayor and Council
In The Committee On the Whole

Date: March 12, 2012

From: Roderick Carle
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File: 234312

Subject: New Westminster Wi-Fi Pilot Project Findings

RECOMMENDATION:

1. **THAT** Council receives the New Westminster Wi-Fi Pilot Project Findings as recommended by the Electric Utility Commission.
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1. PURPOSE

The purpose of the Wi-Fi Pilot was to determine:

- a) The reliability and feasibility of the new 802.11n Wi-Fi technology.
- b) Test out potential Wi-Fi applications, including municipal wireless applications.
- c) Gain user feedback and experience on the use of the City's Wi-Fi network.

2. BACKGROUND

The Wi-Fi Pilot Project study was approved by Council and the Electric Utility Commission in May 2009 to allow the City to better evaluate the feasibility and potential benefits of the City wide Wi-Fi initiative. It is a joint project by the City's Electrical Utility and Information Technology Services Division, with close collaboration at various levels from project planning to implementation. After a comprehensive RFP process, the City selected Bell Canada and Motorola to implement this Wi-Fi Pilot project. The pilot was launched in July 2010 with a capital budget of \$100K. The three chosen sites for this

study were: Queens Park Arena & Arenex, Public Library, and Uptown business corridor (Sixth St & Sixth Ave). In Spring of 2011, the Wi-Fi coverage was expanded to include the Youth Center/Century House and City Hall. The size of the City's Internet bandwidth was also upgraded to allow more users to try out this Wi-Fi network. The Wi-Fi pilot trial period ended in August 2011. Since the launch of this Wi-Fi Pilot project, there has been much media coverage including CBC news, CKNW, The New Westminster Record, The News Leader and trade magazines.

3. METHODOLOGY

The following summarizes the methodology and tasks involved in implementing this Wi-Fi Pilot project:

- i) The three chosen sites provided a good sample of potential users of the City Wi-Fi network: users/students at the Public Library, parents/patrons at the City Arenas, and visitors/customers at shops in the Uptown business corridor.
- ii) The Wi-Fi technology chosen was based on the most advanced version available in the world (802.11n).
- iii) Engineering surveys and radio spectrum analyses were conducted at each location to ensure proper coverage and efficacy of the Wi-Fi signal strengths.
- iv) A total of seven external Motorola 8131 AP antennas and eighteen internal Motorola 7131 AP antennas were installed at the pilot sites.
- v) Three distinct Wi-Fi zones (SSID) were configured for public access, each with its own unique password. In addition, several private networks were set up to enable staff access to the City's internal computer network.
- vi) Initially, the maximum number of users was restricted to only 15 at each site. Later, with the newly upgraded Internet pipe, this threshold was expanded to 30 users with two hour limit session time.
- vii) Several wireless applications were also tested on this Wi-Fi network, which could potentially help improve municipal operational efficiencies in some areas.
- viii) A User Survey was conducted in July/August 2011 to gain user feedback on their experience with this City Wi-Fi Trial network.

4. KEY FINDINGS

a) Users

- i) During the trial period, a consistently large volume of users were using the City Wi-Fi network (averaging 2200 to 2300 users per month).
- ii) The most frequent number of users (in order of use) was at: The Public Library; Queens Parks; and Uptown business corridors/malls.
- iii) Most of the users were using the Wi-Fi to access the internet primarily to surf, read articles, check e-mails, watch videos or use social media applications.
- iv) From the feedback received, the availability of Wi-Fi at our municipal facilities and arenas was very much welcomed by our patrons and other public users.
- v) A few citizens have expressed their concerns over the potential health risks of the Wi-Fi network. Health Canada and other Provincial health agencies have provided assurances that the Wi-Fi signals do not pose any health risks to the public.

b) Technology

- i) Overall, the 802.11n Wi-Fi technology has proven to be reliable and stable during the trial period, and could be used for a wider city deployment strategy.
- ii) The performance speed and throughput of the 802.11n Wi-Fi network has been excellent and one of the fastest public hot spots in the Lower mainland.
- iii) Users were generally impressed with the overall performance speed, although there were occasions of users having difficulties signing-on mainly due to user quota or password issues.
- iv) The Wi-Fi coverage worked best if the user was within 100m of the Access Point (AP). Inside some larger buildings (e.g. Library, Queen Park Arena), additional internal AP were required to ensure consistent signal coverage.
- v) There was no data encryption on this Pilot Wi-Fi network, and henceforth, it was not fully secure for E-commerce related transactions.

c) Wireless Applications Tested

Amongst the wireless applications tested on this City Wi-Fi network included:

- i) **Public Internet Access**
Public Internet Access has been the most popular amongst the wireless applications tested. The meshed 802.11n Multiple-Input-Multiple-Output

(MIMO) Wi-Fi network proved it can handle a fair number of users simultaneously. Most modern mobile devices, such as I-Pads, Laptop PCs can sign on to the Wi-Fi network quite easily.

ii) Network Access for Municipal Staff

With secured network access via VPN, city employees can conveniently access the City's computer network using their laptops at any of the hot spots. This mobile capability could be beneficial to field staff such as by-law enforcement officers, fire inspectors and building inspectors wanting access to the city computer databases without going back to their offices.

iii) Wireless Parking Meter

A newer generation Wi-Fi enabled parking meter was tested for its systems performance and ease of transaction. The meter worked well and interfaced seamlessly with our Wi-Fi network. The City could potentially save significant monthly telephone carrier charges should this type of Wi-Fi enabled wireless parking meters be deployed around the community in the future.

iv) Wireless Fleet Management System

A data recording system was also tested on City vehicles, using the Wi-Fi network to transfer data from the vehicles to the computer server at the end of the day. The fleet management data recording system worked well as expected and installation of this smart recorder in all vehicles is currently under way.

v) Wi-Fi Phones

New portable Wi-Fi phones were also tested out at Canada Games Pool for staff members that need to move around the premises without carrying a cellular phone. These Wi-Fi phones can be connected to the City's VOIP system, which would save air-time charges by cellular telephone companies.

5. USER FEEDBACK SURVEY RESULTS

About 110 users responded to our on-line User Feedback survey. The following summarizes the findings:

- i) Approximately 60% of respondents said they had used the Wi-Fi network regularly.
- ii) Majority of respondents (90%) said the Wi-Fi network was quite reliable overall.
- iii) On locations availability:
 - 79 % of the respondents said we should have Wi-Fi services available at municipal facilities such as Arenas, Library and Parks.
 - 68% of the respondents said Wi-Fi services should also be available in our business corridors, e.g. Uptown and Downtown districts.
 - 58% of the respondents think we should expand the Wi-Fi Services to residential neighbourhoods such as Sapperton and Queensborough.
- iv) On cost of Wi-Fi service:
 - 3% of respondents said we could charge over \$20 per month.
 - 13% of respondents said we could charge \$10-\$20 per month.
 - 31% of respondents said we should charge less than \$10 per month.
 - 54% of respondents said the Wi-Fi Service should be free.

8. INTERDEPARTMENTAL LIASON/INPUT

The Electric Utility Commission, the Finance and Information Technology Department and IT Steering Committee have had input to this report.

9. CONCLUSION

The City Wi-Fi Pilot was successful in meeting its stated objectives. It demonstrated that the newer Wi-Fi 802.11n technology is capable and viable as a full City Wi-Fi strategy. It also showed that the Wi-Fi service is very popular with the many residents/visitors who frequent the City's civic facilities. The wireless applications tested seemed to work well and could potentially help improve municipal operational efficiencies in some areas. The City is currently exploring options and feasibility of continuing and/or expanding the WiFi service and network.

Respectfully submitted by,



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Approved for Presentation
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