

**Price Comparisons of
Wireline, Wireless and Internet Services in
Canada and with Foreign Jurisdictions**

2015 Edition

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Canadian Radio-television and Telecommunications
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Wall Communications Inc.

NOTE: The views expressed in this document are solely those of Wall Communications Inc. and do not necessarily represent the views of the Canadian Radio-television and Telecommunications Commission or Industry Canada.

TABLE OF CONTENTS

OVERVIEW	i
1.0 INTRODUCTION.....	1
2.0 METHODOLOGY.....	3
2.1 Service Basket Design.....	3
2.2 Canadian Price Data Collection.....	4
2.3 International Price Data Collection.....	6
2.4 Summary of New Additions and Updates	9
3.0 WIRELINE SERVICE	11
3.1 Wireline Service Baskets	11
3.2 Canadian Wireline Service Prices.....	12
3.3 International Wireline Service Prices	13
4.0 MOBILE WIRELESS SERVICE	16
4.1 Mobile Wireless Service Baskets.....	16
4.2 Canadian Mobile Wireless Prices	17
<i>Comparison of Incumbent and New Entrant Prices.....</i>	<i>20</i>
<i>Incumbent Flanker Brand Prices.....</i>	<i>21</i>
<i>Reseller or MVNO Prices.....</i>	<i>23</i>
4.3 International Mobile Wireless Service Prices	24
4.4 U.S. Incumbent and Regional Service Provider Prices.....	26
4.5 Canada-U.S. Roaming Prices.....	28
<i>Base "Pay-As You-Go" Roaming Rates.....</i>	<i>29</i>
<i>Add-on Package Stand-alone and Bundled Roaming Rates.....</i>	<i>31</i>
5.0 BROADBAND INTERNET SERVICE.....	35
5.1 Broadband Internet Service Baskets	35
5.2 Canadian Broadband Service Prices	36
<i>Reseller ISP Prices.....</i>	<i>38</i>
5.3 International Broadband Service Prices.....	39
5.4 International Rural & Remote Broadband Service Prices	43
6.0 MOBILE INTERNET SERVICE	47
6.1 Mobile Internet Service Baskets	47
6.2 Canadian Mobile Internet Service Prices	47
6.3 International Mobile Internet Service Prices.....	49
7.0 BUNDLED SERVICES.....	53
7.1 Bundled Service Baskets	53
7.2 Canadian Bundled Service Prices	53
7.3 International Bundled Service Prices	55
ATTACHMENT 1 – SERVICE BASKETS	58
ATTACHMENT 2 – CANADIAN PRICE COMPARISONS	60
ATTACHMENT 3 – INTERNATIONAL PRICE COMPARISONS.....	66

OVERVIEW

This is the eighth edition of Wall Communications' annual telecom services price comparison study. The individual services covered by the study include: wireline, mobile wireless, broadband Internet and mobile Internet services. In addition, bundles of these same services along with basic digital TV services are also included in the study.

For each individual service category, prices are measured for a series of defined "service baskets" which have been designed to reflect typical Canadian low to high telecom service usage levels and features, including an "average" consumption basket for a typical Canadian consumer. There are two to five service baskets or "levels" defined for each individual service covered by the study. The lowest available advertised prices, as offered by the surveyed service providers included in the study, are used to measure the prices of each of the defined service baskets.

For Canada, the surveyed service providers include the incumbent telephone companies (e.g., Bell and TELUS) and cable companies (e.g., Rogers, Shaw and Videotron), resellers (e.g., Primus and Teksavvy) and wireless market entrants (e.g., WIND and Mobilicity). Prices are measured in six metropolitan areas: Halifax, Montreal, Toronto, Winnipeg, Regina and Vancouver. Aggregate Canada-wide prices are determined on a weighted average basis.

For international comparison purposes, prices have also been measured using the same methodology for the same set of service baskets for seven other countries: Australia, France, Germany, Italy, Japan, the United Kingdom (U.K.) and the United States (U.S.).

There are several new additions to this year's study, including:

- i) the expansion of the geographic coverage within Canada and the U.S. to include the cities of Winnipeg and Minneapolis, increasing the number of Canadian and U.S. cities covered to six and four, respectively;
- ii) the addition of a fifth mobile wireless service basket, which includes "unlimited" nationwide talk & text and 5 GB of data; and
- iii) the inclusion of additional reseller competitors in the mobile and broadband markets: PC Mobile and Teksavvy, respectively.

The highlights of this year's price comparison study update follow.

Wireline

Three service basket levels are considered in the case of wireline services: Level 1 includes low local and long distance call volumes, Level 2 includes average call volumes plus 2 features, and Level 3 has high call volumes plus a full set of features.

- *Domestic Trends:* This year, Canadian wireline service baskets prices have increased significantly. The Level 1, 2 and 3 service basket prices increased 4%, 9% and 8%, respectively, relative to last year. These increases are consistent with the historical trends in wireline service prices over the last five years which has seen Level 1 and 2 basket prices increase at average annual rates of 6% and 5%, respectively, whereas Level 3 basket prices have increased more slowly at 2% per year on average (i.e., at roughly the rate of inflation).
- *International Comparison:* Canada's Level 1 and 2 wireline service basket price rankings relative to the seven surveyed jurisdictions included in the study have slipped from being in the middle to now residing at the higher-end of the group. On the other hand, in the case of the Level 3 (higher-usage) basket, the Canadian average price continues to sit in the mid-range of wireline prices measured for the group of surveyed countries.

Mobile Wireless

Five service basket levels are considered in the case of mobile wireless services: Level 1 includes low local and long distance call volumes; Level 2 includes average call volumes plus 2 features and 300 texts per month; Level 3 includes high call volumes (but not unlimited) plus a full set of features, 300 texts and 1 GB of data usage per month; Level 4 includes unlimited nationwide talk and text along with 2 GB of data; and Level 5 includes unlimited nationwide talk and text along with 5 GB of data.

- *Domestic Trends:* Canadian Level 1, 2 and 3 mobile wireless service basket prices all increased significantly this year relative to last – i.e., by 4%, 8% and 7%, respectively. In marked contrast, the Level 4 basket price declined, dropping by 11% from roughly \$93 to \$83. The average price of the Level 5 basket is roughly \$107 in Canada; however, since it is new to the study this year, its price cannot be compared to previous years. Average mobile wireless prices were generally found to be lowest in the cities of Winnipeg and Regina.
- Since 2008, the first year this study was conducted, the Canadian average price of the Level 1 basket has increased by total of 14%, whereas the average prices of the Level 2 and 3 baskets have declined by a total of 20% and 24%, respectively.

- *Entrants' Prices:*¹ The wireless entrants continue to offer mobile wireless prices that are significantly lower than those of the incumbents – i.e., 29%, 26%, 37%, 39% and 50% lower for service basket Levels 1 to 5, respectively.
- *Incumbent Flanker Brand Prices:*² The incumbents' flanker brand prices are also priced at a considerable discount to the incumbent primary brand services – i.e., 18%, 23%, 20%, 13% and 10% lower for the Levels 1 to 5 baskets, respectively. Relative to last year, however, the average discounts offered by the flanker brands relative to the incumbent primary brands prices have generally declined.
- *Reseller/Mobile Virtual Network Operator (MVNO) Prices:*³ For Levels 1, 2 and 3 service baskets, reseller/MVNO prices are 14% to 25% below those of the incumbents and, therefore, generally comparable to those offered by the incumbent flanker brands. Similarly, like the flanker brands, the price gap between the reseller/MVNO and incumbent Level 4 prices is relatively narrow at 9%. In marked contrast, for Level 5, the average reseller/MVNO price exceeds the incumbents' price by 22%.
- *International Comparison:* Relative to the seven foreign jurisdictions included for this study, Canada's average Level 1 basket price is the highest of the group. For the Level 2 and 3 baskets, Canada ranks on the high side of the group, with lower average prices than only Japan and the U.S. Similarly, Canada's ranks on the high side of the group for both the Level 4 and 5 baskets, with a lower average price than only the U.S.
- *U.S. Regional Carrier Pricing:*⁴ Like the Canadian entrants and incumbent flanker brands, the U.S. regional carriers' average prices are generally lower than those of the U.S. incumbents – i.e., by 24%, 15%, 30% and 32% in the case of Level 2, 3, 4 and 5 baskets, respectively. However, for the Level 1 basket, the U.S. regional carriers' average price is considerably higher than those of the U.S. incumbents (i.e., over 16% higher).
- *Canada – U.S. Roaming Rates:* A comparison of cross-border roaming rates offered by the Canadian and U.S. incumbents does not suggest that consumers are significantly better off in either country as far as the overall set of available roaming charges is concerned. On the other hand, the Canadian incumbent flankers and new entrants offer far lower roaming rates than the Canadian incumbents, whereas the U.S. regional carriers

¹ Includes Eastlink, Mobilicity, Videotron and WIND.

² Includes Bell Virgin, Rogers Fido, Rogers Chatr, and TELUS Koodo.

³ Includes Primus and PC Mobile.

⁴ Includes Cricket, C-Spire, MetroPCS and US Cellular.

offer either no roaming services in Canada whatsoever or, where they do, their discounts relative to the U.S. incumbents are more limited. Consequently, the Canadian incumbent flankers' and new entrants' roaming rates generally compare more favourably to those available from both the U.S. incumbents and regionals.

Broadband Internet

Four broadband Internet service baskets are included in the study, which are primarily defined on the basis of download speed: Level 1 covers service speeds of 3 Mbps or less, Level 2 covers 4 to 15 Mbps, Level 3 covers 16 to 40 Mbps and Level 4 covers services with speeds over 40 Mbps.

- *Domestic Trends:* For the most part, Canadian broadband prices declined this year relative to last year. The average prices of the Level 1, 3 and 4 broadband service baskets decreased by 5%, 1% and 7%, respectively. In contrast, the Level 2 basket price increased by 3%. Over the last five years, Canadian broadband prices have generally trended upwards. Level 1 and 2 basket prices have increased faster than the rate of inflation (i.e., 8% and 3% per year on average, respectively), whereas Level 3 and 4 basket prices have increased at an average annual rate equal to or below the rate of inflation (i.e., 2% and 1% per year on average, respectively).
- *Reseller ISP Prices:*⁵ Reseller ISP broadband service prices are consistently lower than those of the incumbents across all four service baskets, with price discounts ranging from 21% in the case of the Level 1 basket to 30% in the case of the Level 3 basket. Typically reseller ISPs also offer either higher data caps than the incumbents or no data caps at all.
- *International Comparison:* Very few of the surveyed service providers continue to offer Level 1 (sub 3 Mbps) broadband services. Those who do were found in Canada, the U.S. and Japan. Among these countries, Canada was found to have the lowest average Level 1 broadband basket price. Canada also compares favourably in the case of the Level 2 (4 – 15 Mbps) broadband service basket, where it falls in the middle of the group. Otherwise, Canada's average Level 3 (16 – 40 Mbps) and Level 4 (> 40 Mbps) basket prices are at the high end of the group of surveyed countries included in the study.
- *International Comparison of Rural and Remote Area Fixed Wireless Services:* A comparison of residential rural and remote area fixed wireless broadband services available in Canada and the U.S., the U.K. and

⁵ Includes Primus and Teksavvy.

Australia was also conducted for the same Level 1 to 4 broadband service baskets. In this case, average Canadian Level 1, 2 and 3 fixed wireless broadband Internet service prices compare favourably with those available in the U.S., but are otherwise considerably higher than those in Australia and the U.K. None of the surveyed Canadian ISP offered a Level 4 (40 Mbps plus) fixed wireless broadband service. Of the other three countries considered, there was only one instance of a surveyed service provider offering such a service and it was located in the U.K.

Mobile Internet

Two mobile Internet service baskets are included in the study. Level 1 covers plans providing 2 GB and Level 2 covers plans providing 5 GB of data usage per month.

- *Domestic Trends:* This year, the Canadian average Level 1 and 2 mobile Internet service prices increased slightly relative to last year, by just under 1% in both cases. Since 2010, the Level 1 basket price has declined by 20% overall, whereas relative to 2012, the first year the Level 2 mobile Internet service basket was included in the study, the Level 2 price has declined by only 2% in total.
- *Entrants' Pricing:* The wireless entrants continue to offer mobile Internet prices that are significantly lower than those of the incumbents – i.e., 22% less for Level 1 and 32% less for Level 2. The Level 1 and 2 differentials are somewhat smaller this year compared to last.
- *International Comparison:* Canada's average Level 1 and 2 mobile Internet service prices are on the high-side of the group of seven surveyed countries, generally only lower than or close to the average prices measured for the U.S. and Japan.

Bundled Services

Three service bundles are considered in the study: Bundle 1 includes wireline, broadband Internet and mobile wireless services; Bundle 2 includes wireline, broadband Internet and basic digital TV services; and Bundle 3 includes all four of these services.

- i) *Domestic Trends:* This year, Canadian average Bundle 1, 2 and 3 prices increased by 9%, 2% and 3%, respectively. Over the course of the last five years, the average prices of all three bundles have generally trended upwards at rates between 3% and 4% per on average – i.e., slightly above the average annual rate of inflation.

- ii) *International Comparison:* Average Canadian bundled service prices fall on the high side of the group of countries surveyed for this study. While differences across countries in the underlying services included in the bundles (especially broadband and digital TV services) can make bundled service comparisons somewhat tenuous, it is noteworthy that Canadian bundled service rates continue to compare very favourably to those in the U.S., where service pricing and provisioning practices are similar to those in Canada.

The following table provides a summary of the 2015 price comparison results for Canada and the seven surveyed foreign jurisdictions included in the study. All reported prices for the surveyed foreign jurisdictions exclude sales taxes and are expressed in purchasing power parity (PPP) adjusted Canadian dollars.

Summary of International Price Comparisons 2015

Average Monthly Prices in PPP adjusted \$CDN

	Canada	U.S.	U.K.	France	Australia	Japan	Germany	Italy
Wireline Service								
Level 1 (low-volume use)	\$40.64	\$38.49	\$36.60	\$37.85	\$47.41	\$30.41	\$38.57	\$40.09
Level 2 (average use)	\$59.44	\$64.45	\$46.17	\$47.37	\$64.31	\$58.18	\$59.24	\$51.90
Level 3 (high-volume use)	\$64.96	\$72.48	\$59.97	\$47.37	\$70.94	\$90.31	\$62.93	\$66.32
Wireless Service								
Level 1 (low-volume use)	\$37.29	\$37.04	\$23.50	\$14.26	\$25.35	\$27.23	\$15.23	\$12.15
Level 2 (average use)	\$48.68	\$57.59	\$33.62	\$40.87	\$38.98	\$54.81	\$35.35	\$22.48
Level 3 (high-volume use)	\$85.22	\$85.65	\$68.03	\$61.50	\$69.97	\$88.96	\$71.91	\$53.94
Level 4 (unlimited talk&text, 2 GB data)	\$83.08	\$92.23	\$62.03	\$48.24	\$77.80	na	\$71.56	\$63.47
Level 5 (unlimited talk&text, 5 GB data)	\$107.50	\$131.12	\$68.93	\$60.96	\$97.43	na	\$102.74	\$77.44
Broadband (Fixed access)								
Level 1 (\leq 3 Mbps, 10 GB/month)	\$47.51	\$54.54	na	na	na	\$57.83	na	na
Level 2 (4 - 15 Mbps, 50 GB/month)	\$56.66	\$67.66	na	\$67.78	\$53.75	\$61.03	\$29.08	\$54.31
Level 3 (16 - 40Mbps, 100 GB/month)	\$67.81	\$91.55	\$41.25	\$51.68	\$69.64	\$64.50	\$47.08	\$52.28
Level 4 (\geq 40 Mbps, 150 GB/month)	\$80.63	\$105.90	\$50.75	\$57.95	\$72.66	\$65.32	\$59.32	\$60.45
Mobile Internet (\geq 3G Technology)								
Level 1 (2 GB/month)	\$43.55	\$63.02	\$21.44	\$17.60	\$28.15	\$55.49	\$25.96	\$15.87
Level 2 (5 GB/month)	\$64.48	\$77.72	\$30.60	\$29.18	\$41.69	\$63.82	\$37.17	\$27.05
Bundled Services								
1) Wireline-Broadband-Wireless	\$157.20	\$154.78	\$94.07	\$82.75	\$145.98	\$156.57	\$131.06	\$104.39
2) Wireline-Broadband-DTV	\$139.78	\$168.62	\$77.54	\$54.35	\$136.44	\$136.93	\$118.08	\$91.64
3) Wireline-Broadband-Wireless-DTV	\$187.33	\$196.20	\$95.72	\$93.64	\$175.67	\$194.36	\$156.78	\$116.97

Latest available OECD Purchasing Power Parity (PPP) indexes were used to calculate PPP-adjusted exchange rates. Average market exchange rates for the month corresponding to the OECD PPPs were used to convert foreign prices into Canadian dollars.

Wall Communications Inc. 2015

1.0 INTRODUCTION

This study provides a 2015 update of the previous annual telecommunications price comparison studies conducted over the period 2008 to 2014 by Wall Communications Inc. (Wall Communications) for the Canadian Radio-television and Telecommunications Commission (CRTC) and Industry Canada.

As in previous years, the consumer telecom services covered in this study include the following stand-alone and bundled services:

- i) wireline,
- ii) mobile wireless,
- iii) broadband Internet access (using wireline and fixed wireless technology),
- iv) mobile Internet access, and
- v) bundles of the first three services and basic digital TV service.

A series of service baskets reflecting different service usage levels has been established for each of these service categories.

For Canada, the study provides a comparison of prices for each defined service basket for the following cities: Halifax, Montreal, Toronto, Winnipeg, Regina and Vancouver. Winnipeg has been added to the study this year. Service prices for Canada as a whole are derived as the weighted averages of the prices measured for each of the six surveyed cities.

The study also measures prices for the same set of service baskets for Australia, France, Germany, Italy, Japan, the United Kingdom (U.K.), the United States (U.S.). As a result, the study covers all G7 countries along with Australia. Service basket prices in these seven foreign jurisdictions are compared with those measured for Canada.

With this update, the study now provides comparable historical service basket price data for the eight-year period 2008 to 2015.

There are several notable modifications to this year's study:

- i) the expansion of the geographic coverage of the Canadian price data collection exercise to include the City of Winnipeg;
- ii) the expansion of the geographic coverage of the U.S. price data collection exercise to include the City of Minneapolis, Minnesota (MN), increasing the number of U.S. cities covered from three to four;
- iii) the addition of a fifth mobile wireless service basket, which includes "unlimited" nationwide talk & text and 5 GB of data;

- iv) the inclusion of additional reseller competitors in the mobile and broadband markets: PC Mobile and Teksavvy, respectively; and
- v) the removal of the comparison of satellite-based broadband services and prices available in rural and remote areas in Canada, Australia, the U.K. and the U.S. which was included in last year's study; however, the comparison of fixed wireless-based broadband services and prices that were included in last year's study for these same countries has been retained.

In terms of layout, the next section of this report, Section 2, provides a brief review of the methodology used to measure and compare stand-alone and bundled service basket prices, and describes in more detail all changes made in this year's study relative to last year's study. The following five sections of the report, Sections 3 through 7, provide Canadian and international price comparison results for wireline, mobile wireless, broadband Internet access, mobile Internet access and bundled services, respectively. A detailed summary of all service baskets and bundles included in the study is provided in Attachment 1. Detailed historical summary results for the period 2008 to 2015 are provided in Attachments 2 and 3.

2.0 METHODOLOGY

2.1 Service Basket Design

As in previous studies, this study relies on the service basket-based price comparison methodology described in Wall Communications' 2008 methodology report.⁶ Various modifications to the 2008 methodology have been made in successive studies primarily to reflect changes in service usage patterns or characteristics over time. All such changes have been carried over into this year's study. All additional changes in methodology introduced this year are described below.

The price comparison methodology used in this study is based on a "service basket" approach where separate telecom service baskets are defined on the basis of increasing "levels" of service usage, features and, where applicable, performance:

- **Level 1:** entry level or low-volume usage
- **Level 2:** average or mid-level usage
- **Level 3:** above-average or high-volume usage
- **Levels 4 and 5:** very high-volume or unlimited usage options

The number of defined service basket levels for each of the stand-alone telecom services considered in this study varies from two to five in total:

- i) **Wireline:** Basket Levels 1 to 3
- ii) **Mobile Wireless:** Basket Levels 1 to 5
- iii) **Broadband Internet Access:** Basket Levels 1 to 4
- iv) **Mobile Internet Access:** Basket Levels 1 and 2.

Each of the service baskets has been designed to reflect, as applicable, low, mid, high and very-high volume, including unlimited, service options that are generally intended to reflect a broad range of typical Canadian consumer usage levels, including an "average" consumption basket for a typical Canadian consumer.

Three service bundles are also included in the study:

- **Bundle 1:** wireline, broadband Internet and mobile wireless
- **Bundle 2:** wireline, broadband Internet and digital TV
- **Bundle 3:** wireline, broadband Internet, mobile wireless and digital TV

Level 2 stand-alone service baskets are generally used in each of the bundles. In some cases, however, there are restrictions on the specific service elements that are eligible for bundling discounts. In such cases, eligible service elements

⁶ Wall Communications, *An Examination of Alternative Approaches for Conducting Price Comparisons of Wireline, Wireless and Internet Services in Canada and with Foreign Jurisdictions*, prepared for the CRTC and Industry Canada, 5 May 2008.

are included instead (which can involve including a Level 3 or 4 rather than Level 2 service element). For the digital TV service component, a "basic" digital television service package option is selected for inclusion in the applicable bundles.

The specific service elements included in each service basket are described in the following sections and the associated service elements and usage assumptions in each case are also summarized in Attachment 1.

2.2 Canadian Price Data Collection

The Canadian price data included in the study has been collected from a variety of telecom service providers (TSPs), including incumbent telephone companies (i.e., Bell Aliant, Bell Canada, MTS, SaskTel and TELUS) and incumbent cable companies (i.e., Eastlink, Videotron, Rogers, Access and Shaw). Services offered by resellers Primus and, for the first time this year, Teksavvy and PC Mobile are also collected for the study. In addition, mobile services offered by new entrant wireless service providers WIND and Mobilicity are also taken into account.⁷ In terms of geographic coverage, price data is collected for each of the following six Canadian cities: Halifax, Montreal, Toronto, Winnipeg, Regina and Vancouver. Table 1 provides a list of the surveyed Canadian service providers in this year's study broken out by city and by service basket.

Table 1
Selected Canadian Cities and Service Providers

City	Service Baskets	Service Providers
Halifax	Wireline Broadband Internet Mobile Wireless	Bell Aliant, Eastlink Bell Aliant, Eastlink, Teksavvy Bell, TELUS, Rogers, Eastlink, PC Mobile, Incumbent Flanker Brands
	Mobile Internet Bundles	Bell, TELUS, Rogers, Eastlink Bell Aliant, Eastlink
Montreal	Wireline Broadband Internet Mobile Wireless	Bell, Videotron, Primus Bell, Videotron, Primus, Teksavvy Bell, TELUS, Rogers, Primus, Videotron, PC Mobile, Incumbent Flanker Brands
	Mobile Internet Bundles	Bell, TELUS, Rogers, Videotron Bell, Videotron, Primus (as applicable)
Toronto	Wireline Broadband Internet Mobile Wireless	Bell, Rogers, Primus Bell, Rogers, Primus, Teksavvy Bell, TELUS, Rogers, Primus, WIND, Mobilicity, PC Mobile, Incumbent Flanker Brands
	Mobile Internet Bundles	Bell, TELUS, Rogers, WIND, Mobilicity Bell, Rogers, Primus (as applicable)

⁷ Note that former new entrant Public Mobile was acquired by TELUS in late 2013. Given it is now owned by an incumbent, it has been removed from the study.

City	Service Baskets	Service Providers
Winnipeg	Wireline Broadband Internet Mobile Wireless Mobile Internet Bundles	MTS, Shaw MTS, Shaw, Teksavvy MTS, TELUS, Rogers, PC Mobile, Incumbent Flanker Brands MTS, Bell, TELUS, Rogers MTS, Shaw
Regina	Wireline Broadband Internet Mobile Wireless Mobile Internet Bundles	SaskTel, Access Communications SaskTel, Access Communications, Teksavvy SaskTel, Bell, TELUS, Rogers, PC Mobile, Incumbent Flanker Brands SaskTel, Bell, TELUS, Rogers SaskTel, Access Communications
Vancouver	Wireline Broadband Internet Mobile Wireless Mobile Internet Bundles	TELUS, Shaw, Primus TELUS, Shaw, Primus, Teksavvy Bell, TELUS, Rogers, Primus, WIND, Mobilicity, PC Mobile, Incumbent Flanker Brands Bell, TELUS, Rogers, WIND, Mobilicity TELUS, Shaw, Primus (as applicable)

City-specific prices for each of the stand-alone and bundled service baskets offered by the TSPs listed in Table 1 are determined using each service provider’s respective estimated subscriber-based market share as weights.⁸ In addition, to determine Canada-wide market prices, city-specific prices are aggregated using corresponding city population levels as weights. Weighted average prices for each surveyed city and for Canada are provided in Attachment 2 for each of the service baskets and bundles included in this study.

In addition, for the mobile wireless service baskets, services offered by the incumbents' flanker brand services – i.e., Bell Virgin, Rogers Fido and Rogers Chatr, and TELUS Koodo – are also taken into account. To maintain consistency with previous years' studies, the incumbents' flanker brand service prices are not included in the calculation of the above-noted city-specific or national aggregate prices. However, in Section 4.2 below, the incumbents' flanker brand prices are compared with incumbents' and entrants' mobile wireless prices as a separate analysis.

The price data collected for this study is drawn from the surveyed TSPs' websites and, where necessary, supplemented with further clarifications from customer service representatives (CSRs).⁹ The price data reflects currently advertised

⁸ The estimated market shares are drawn from the CRTC's most recent annual Communications Monitoring Report (CMR), which in the case of the present study is the CRTC's 2014 CMR (dated October 2014). In the case of wireline services, estimated market shares are city-specific; in the case of mobile wireless services, estimated market shares are province-specific; and in the case of residential broadband services the estimated market shares are national in scope. Mobile Internet market shares are based on mobile wireless market shares and the service bundle shares are based on the combination of the wireline, mobile wireless and broadband market shares.

⁹ The 2015 Canadian price data was collected over the period covering the last week of January to the last week of February 2015.

prices that are generally available to new customers or existing customers changing service plans. The lowest available currently advertised price is used to determine the total price of each service basket. For this purpose, regular or standard prices are used – i.e., short term promotional discounts available to new customers are not taken into account.¹⁰

Overall, the Canadian price comparisons included in this year's study are based on the measurement of the prices of just over 500 separate service baskets, covering six cities, two to seven service providers by city and up to seventeen stand-alone and bundled service baskets for each service provider.

2.3 International Price Data Collection

Seven foreign jurisdictions are included in the study: Australia, France, Germany, Italy, Japan, the U.K. and the U.S. With the exception of the U.S., in each case, price data was collected for the services available in each country's largest city. For the U.S., four cities of varying size distributed across that country were used – i.e., Boston, Kansas City, Minneapolis and Seattle. Minneapolis was included for the first time this year to add greater geographic diversity to the group of cities included for the U.S. The service providers surveyed by country and, as applicable by city, are summarized in Table 2.¹¹

Table 2
Selected Foreign Jurisdictions and Service Providers

City	Basket	Service Providers
United States Boston, MA	Wireline	Verizon, Comcast
	Broadband Internet	Verizon, Comcast
	Mobile Wireless	AT&T, Verizon, Sprint, US Regionals ¹
	Mobile Internet	AT&T, Verizon, Sprint
Kansas City, MO	Bundles	Verizon, Comcast
	Wireline	AT&T, Time Warner
	Broadband Internet	AT&T, Time Warner
	Mobile Wireless	AT&T, Verizon, Sprint, US Regionals ¹
Minneapolis, MN	Mobile Internet	AT&T, Verizon, Sprint
	Bundles	AT&T, Time Warner
	Wireline	CenturyLink, Comcast
	Broadband Internet	CenturyLink, Comcast
	Mobile Wireless	AT&T, Verizon, Sprint, US Regionals ¹
	Mobile Internet	AT&T, Verizon, Sprint
	Bundles	CenturyLink/Verizon, Comcast

¹⁰ Note that current advertised prices are not necessarily reflective of the average price levels paid by a service provider's customer base as a whole since a significant number of existing customers are on pre-established or legacy service price plans.

¹¹ The 2015 foreign jurisdiction price data was primarily collected over the period covering the first week of February to the end of the second week of March 2015.

Canadian and International Price Comparisons – 2015 Update

City	Basket	Service Providers
Seattle, WA	Wireline Broadband Internet Mobile Wireless Mobile Internet Bundles	CenturyLink, Comcast CenturyLink, Comcast AT&T, Verizon, Sprint, US Regionals ¹ AT&T, Verizon, Sprint CenturyLink/Verizon, Comcast
United Kingdom London	Wireline Broadband Internet Mobile Wireless Mobile Internet Bundles	BT, Virgin, Talk Talk BT, Virgin, EE, AOL EE, Virgin, Vodafone EE, Virgin, Vodafone BT (EE), ² Virgin
Australia Sydney	Wireline/Broadband Mobile Wireless/Internet Bundles	Telstra and Optus Telstra and Optus Telstra and Optus
France Paris	Wireline/Broadband Mobile Wireless/Internet Bundles	Orange (France Telecom), SFR (Neuf Cegetel), Numericable ³ Orange, SFR, Numericable Orange, SFR, Numericable
Germany Berlin	Wireline Broadband Internet Mobile Wireless/Internet Bundles	Deutsche Telekom (DT), Kabel Deutschland (KD) ⁴ DT, KD, Vodafone DT, KD, Vodafone, E-plus (KPN) DT, KD
Italy Rome	Wireline/Broadband Mobile Wireless/Internet Bundles	Telecom Italia, FastWeb Telecom Italia (TIM), Vodafone, WIND Telecom Italia, FastWeb
Japan Tokyo	Wireline Broadband Internet Mobile Wireless/Internet Bundles	NTT, J:Com NTT, J:Com, KDDI, Yahoo! BB NTT DoCoMo, Softbank ⁵ , au KDDI, Y!Mobile ⁵ NTT, J:Com (au KDDI)

Notes: 1) The U.S. Regionals include: Cricket Wireless, MetroPCS, US Cellular and C-Spire Wireless. Note that Cricket Wireless (Leap) was acquired by AT&T and MetroPCS was acquired by T-Mobile.

2) EE was acquired by BT in late 2014. For the purposes of the U.K. bundles, EE's mobile wireless service was included along with BT's wireline, Internet and digital TV services.

3) Numericable and SFR merged in April 2014. They presently continue to market services under their separate brands.

4) KD was acquired by Vodafone in 2013. While they continue to offer fixed broadband services under their separate brands, KD no longer provides mobile wireless or Internet services. KD formerly offered mobile services as an MVNO.

5) In previous studies, wireless service providers Willcom (formerly affiliated with J:Com) and eMobile were included in the study for Japan. Both Willcom and eMobile were acquired by Softbank. eMobile was subsequently rebranded as Y!Mobile. Softbank has also been included in the study place of Willcom.

As in the case of the Canadian incumbent flanker brand mobile wireless price information, to ensure consistency with previous years' studies, the U.S. regional brand service prices (i.e., Cricket, MetroPCS, US Cellular and C-Spire) are not included in the calculation of U.S. national aggregate prices. Comparisons of U.S. incumbent and regional brand prices are provided as a separate price analysis in Section 4.3 below.

For international price comparison purposes, foreign currency prices have been converted to Canadian dollars using currency market exchange rates adjusted for purchasing power parity (PPP) differences between countries. For this study, the OECD's latest available PPP comparative price level indexes for January 2015 were used for this purpose in conjunction with average market exchange rates for the same one-month period.¹²

Canadian dollar-based price comparisons between Canada and other countries can be affected significantly by year-over-year currency exchange rate fluctuations. PPP-adjusted exchange rates take into account both changes in exchange rates and PPP adjustment factors between countries and, therefore, generally provide a more appropriate economic basis for comparing price levels between countries. For this reason, all of the international price comparison results shown in the main body of this report are based on PPP-adjusted Canadian dollars. Own-currency and non-PPP-adjusted Canadian dollar price comparisons are provided in Attachment 3.

It should be noted that fluctuations in both exchange rates and PPP adjustment factors can affect international price comparisons over time. This caveat is particularly relevant in the case of this study given the significant changes in both exchange rates and PPP adjustment factors over the course of the eight year period covered by the study.

As well, it should also be noted that service prices in the U.K., France, Germany, Italy, Australia and Japan are typically quoted inclusive of retail value added taxes (VAT) or goods and services taxes (GST). In each case, we have excluded applicable VAT or GST charges to allow cross-country comparisons of service prices excluding government sales taxes.¹³ On the other hand, where applicable, other industry-specific regulatory fees and surcharges are included for price comparison purposes (e.g., 9-1-1 fees, universal service fees and other regulatory fees).

*Overall, the international price comparisons included in this year's study are based on the measurement of the prices of close to **550** separate stand-alone and bundled service baskets, which includes the new additions to this year's study. Adding the Canadian and international service baskets together, the prices of roughly **1,050** service baskets were measured to generate the price comparison results presented in this report.*

¹² See the OECD's main economic indicators at: <http://www.oecd.org/std/prices-ppp/purchasingpowerparitiespppsdata.htm>.

Currency exchange rates were obtained from: <http://www.xe.com>.

¹³ The VAT rates in the U.K., France, Germany and Italy are 20%, 19.6%, 19% and 22%, respectively. The VAT rate in Japan is scheduled increased from 5% to 8% as of April 2014. The GST in Australia is 10%.

2.4 Summary of New Additions and Updates

As noted at the outset, there are several modifications to this year's study. These include:

- i) *Expanded Geographic Coverage:* The cities of Winnipeg and Minneapolis were added to the Canadian and U.S. price data collection exercise this year. The addition of these cities adds to the diversity of the cities and service providers included in the study.
- ii) *Changes to included Canadian Service Providers:* Incumbent telephone service provider MTS has been included in this year's study as a result of the addition of the city of Winnipeg. Eastlink and Bell Mobility have been added as wireless service providers in the cities of Halifax and Regina, respectively. Resellers Teksavvy (broadband Internet) and PC Mobile (mobile wireless) have also been added to the study. On the other hand, Bell Solo has been dropped since it no longer provides services to new customers and former new entrant Public Mobile has also been dropped since it was acquired by TELUS and, therefore, can no longer be considered as a "new entrant" in competition with the incumbents.
- iii) *Level 5 Mobile Wireless Service Basket:* A new very-high-usage mobile wireless service basket has been added to the study to capture the increased popularity of "unlimited" talk & text plans in Canada as well as higher mobile data usage levels – i.e., 5 GB of data in this case.
- iv) *Broadband Data Usage Levels:* Average broadband data usage in Canada has steadily increased on a year-over-year basis.¹⁴ To reflect this fact, and consistent with previous years' studies, the assumed data usage requirements for the four broadband Internet service baskets have been increased relative to last year. The adopted increases are set out in the table below:

Broadband Basket	Last Year	This Year
Level 1	7.5 GB	10 GB
Level 2	30 GB	50 GB
Level 3	75 GB	100 GB
Level 4	120 GB	150 GB

- v) *Rural and Remote Area Broadband Internet Services:* A sample of satellite and fixed wireless broadband service options and prices available to consumers in rural and remote areas in Canada as well

¹⁴ As reflected in the CRTC's 2013 and 2014 CMRs (Section 5.3 in both cases), average data usage (including upload and download traffic) increased from roughly 30 GB to 50 GB per month between 2013 and 2014.

as in the U.S., U.K. and Australia were compared in last year's study. The satellite broadband service survey has been dropped from this year's study; however, the fixed wireless broadband service survey has been updated to 2015. The fixed wireless broadband service price comparison results are provided in Section 5.4.

- vi) *Other Updates:* As in previous years' studies, updated market share information has been used to determine current year Canadian and international weighted average prices.¹⁵

Since first conducted in 2008, each successive price comparison study update has incorporated a number of generally minor methodological and measurement changes (such as those just mentioned). One exception in this respect applies in the case of the more substantive changes to the broadband Internet service basket definitions introduced in the 2012 study, which significantly affect comparisons of measured broadband prices in 2012 and subsequent years relative to earlier years. They also affect comparisons of bundled service prices between the same two periods given that broadband Internet service is one of the service elements included in all three defined service bundles. In general, given the ongoing methodological and measurement modifications to the study on a year-to-year basis, caution should be exercised when considering price trends over the eight year period for which price data is now available.

¹⁵ For Canada, the CRTC 2014 CMR was relied on for this purpose. For the U.S., FCC market share and industry reports were used. In other cases, regulatory agency market reports, company financial and market analyst reports were also relied on, where necessary.

3.0 WIRELINE SERVICE

3.1 Wireline Service Baskets

As in previous studies, the following service element charges are considered for wireline service price comparison purposes:

- i) access line charges (including, as applicable, free calling allowances);
- ii) local usage/calling charges (where applicable);
- iii) long distance charges for both domestic and international calls;
- iv) optional feature charges (e.g., voice mail, call display & other features); and
- v) other recurring charges, where applicable, such as 9-1-1, network access fees and/or other surcharges or regulatory fees.

One-time service charges, such as installation and activation fees, are excluded.

Three wireline service baskets are included in the study. They consist of the following main elements:

- **Level 1:** 400 incoming & outgoing minutes per month, with 10% of outgoing minutes treated as long distance, and no optional features
- **Level 2:** 1,000 incoming & outgoing minutes per month, with 20% of outgoing minutes treated as long distance, and two optional features (voice mail and call display)
- **Level 3:** 1,600 incoming & outgoing minutes per month, with 30% of outgoing minutes treated as long distance, and a full set of optional features

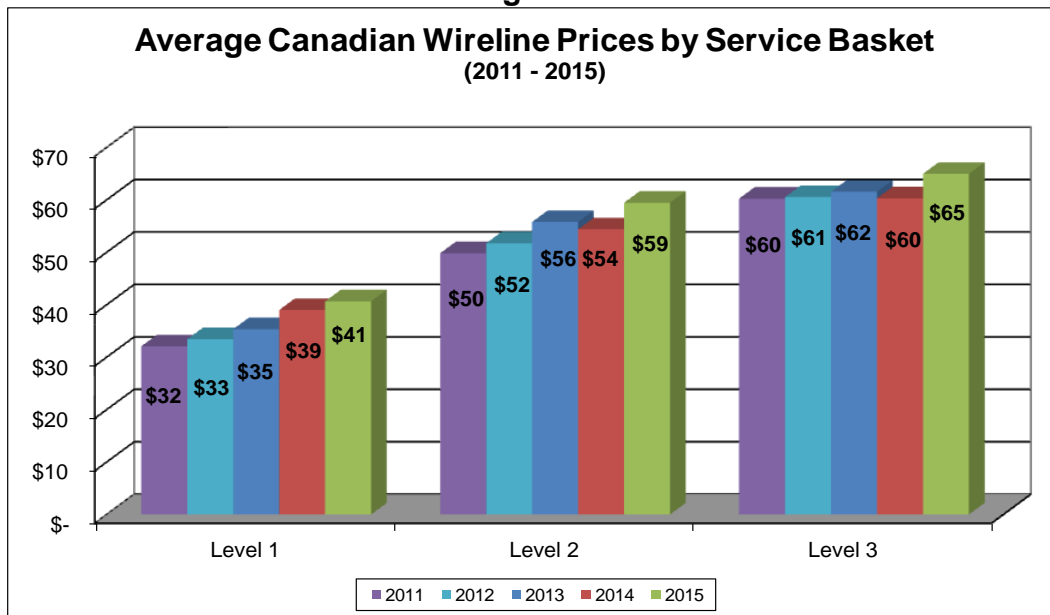
Table A1.1 in Attachment 1 provides a detailed summary of the service elements and usage assumptions for each of the three wireline service baskets included in this study. No changes to the wireline service basket definitions have been made in this year's study relative to previous studies.

3.2 Canadian Wireline Service Prices

Figure 1 below provides a summary of Canadian average monthly prices for each of the three wireline service baskets for the five-year period 2011 to 2015. More detailed wireline price information, by service basket and by surveyed city (i.e., Halifax, Montreal, Toronto, Winnipeg, Regina and Vancouver) for the eight-year period 2008 to 2015, where available, is provided in Table A2.1 in Attachment 2.

- The Level 1 wireline service basket price increased from \$38.99 in 2014 to \$40.64 in 2015, an increase of 4.2%. Average 2015 Level 1 wireline prices varied widely by city, ranging from \$27.34 in Regina to \$47.30 in Toronto. Since 2011, Level 1 prices increased at an average annual rate of 6.1%.
- The Level 2 basket price increased from \$54.37 in 2014 to \$59.44 in 2015, an increase of 9.3%. Average 2015 Level 2 prices also varied widely by city, ranging from \$40.81 in Regina to \$64.88 in Toronto. Over the last five years, Level 2 prices have increased at an average annual rate of 4.5%.
- Lastly, the Level 3 basket price increased from \$60.29 in 2014 to \$64.96 in 2015, an increase of 7.7%. In this case, the lowest average Level 3 price was found in Vancouver at \$48.98 and the highest price was in Regina at \$69.70. Since 2011, Level 3 prices have increased at an average annual rate of 1.9%, well below the Level 1 and 2 growth rates.

Figure 1



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3.3 International Wireline Service Prices

In the case of wireline services, there are a variety of important pricing differences to be taken into account when comparing international prices:

- *Price Structure:* Wireline rate structures in the many foreign jurisdictions differ significantly compared to Canada (as well as the U.S.) where unlimited local calling is the norm. Local phone service rates in Europe, Japan and Australia are often set on a usage sensitive basis. In the case of local calls, per minute charges apply along with a per call set-up or connection fee, both of which can vary depending on the selected service plan.¹⁶ Charges also vary depending on whether a call is made to a landline or mobile number (and can also vary by mobile service provider). Local and national per minute and per call rates are generally the same; as a result, there is typically no price difference between local and domestic long distance calling rates.¹⁷ However, increasingly, new service plans or add-ons are available in the foreign jurisdictions included in this study that provide unlimited national fixed and/or mobile calling options.
- *Bundled VoIP and Broadband:* In Europe, fixed VoIP services are often offered jointly with broadband services. These VoIP plans often include unlimited national calling to fixed and/or mobile lines as well as relatively low cost international calling plans.
- *Regulatory Fees:* In the U.S., there are a number of unique regulatory fees and surcharges (other than sales taxes). These include, among other things, the federal subscriber line charge (SLC) and universal service fund (USF) charges. Collectively, these fees can add up to as much as \$8 to \$12 per month over and above a service provider's local, long distance and feature charges. The range and magnitude of these charges, however, varies by state and, indeed, municipality.¹⁸ As in previous years' studies, the principal surcharges applied in the U.S., namely the SLC and USF, are included in the study. In most of the surveyed countries, including the U.S., emergency 911 fees apply and, therefore, they are also included in the study.

Figure 2 below provides a comparison of current average wireline prices for Canada and the surveyed foreign jurisdictions for each of the three wireline

¹⁶ Australia is unique among the three countries in that local calls to landlines are charged on a per call basis with no additional per minute charges.

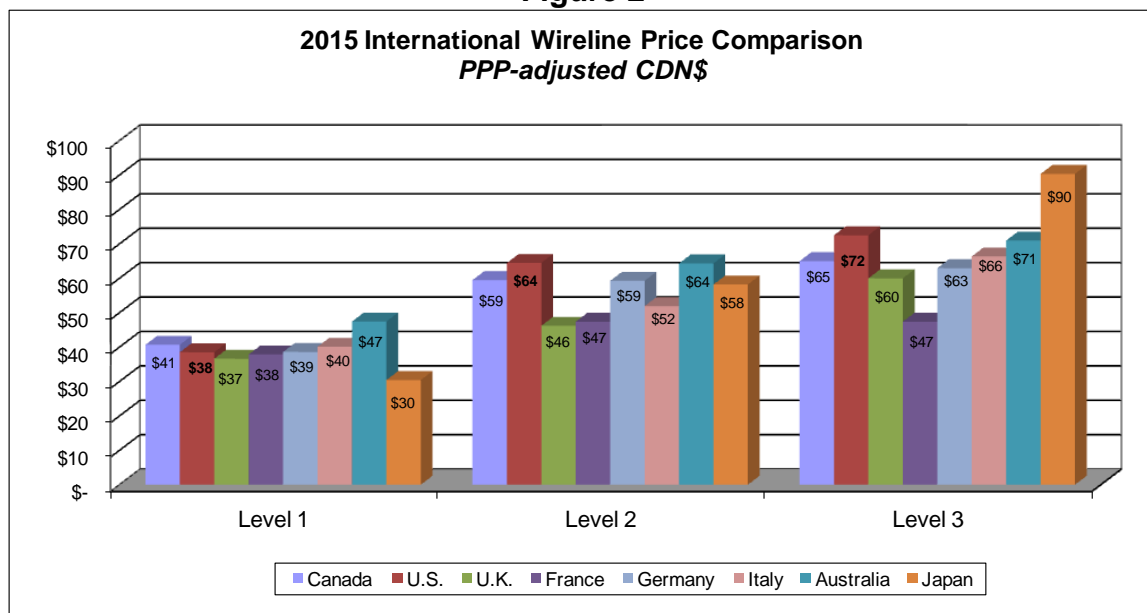
¹⁷ Australia differs somewhat in this respect. Under some home phone service plans different per minute rates can apply depending on the distance of a domestic call.

¹⁸ As noted in previous studies, obtaining precise information on these fees and surcharges is extremely difficult and even company CSRs are unable to provide complete information with regard to these surcharges given they vary so widely by location. In such cases, estimated surcharges have been used.

service baskets. All prices are expressed in PPP-adjusted Canadian dollars and exclude taxes (e.g., VAT or GST). Table A3.1 and Figures A3.1a, b and c in Attachment 3 provide detailed historical wireline service basket information for the period 2008 to 2015.

- In the case of the Level 1 wireline service basket, at \$40.64 per month, Canada sits above the average of the prices measured for the group of surveyed foreign jurisdictions of roughly \$38.50. Among the group of surveyed countries, Canada's Level 1 price ranks seventh overall and, as such, is lower than only eighth-ranked Australia.
- For the Level 2 wireline service basket, at \$59.44 per month, Canada sits in a similar position above the average of the prices measured for the group of surveyed countries of roughly \$56. In this case, Canada's Level 2 price ranks sixth overall, below the measured prices for the U.S. and Australia. The Canadian Level 2 basket price however is very similar to the measured prices for Germany and Japan.
- Canada ranks more favourably in the case of the Level 3 wireline service basket. The Canadian Level 3 basket price of \$64.95 is below the average price for the group of surveyed countries of just over \$67. In this case, Canada's Level 3 basket price ranks fourth overall, below the measured prices for the U.S., Italy, Australia and Japan.

Figure 2



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Relative to previous years' results, Canada's wireline service basket price rankings have slipped in the cases of the Level 1 and 2 baskets. In these cases, the average Canadian prices have moved from the lower to the upper end of the group of surveyed countries. Canada's Level 3 basket price has also slipped slightly, but continues to fall below the average price for the other surveyed countries and continues to rank favourably overall.

In sum, Canadian wireline service prices are on the higher end of the group of surveyed countries in the case of the Level 1 and 2 (lower and mid-level usage) baskets, but compare favourably in the case of the Level 3 (higher-usage) basket, where the Canadian price falls in the mid-range of wireline prices measured for the group of surveyed countries.

4.0 MOBILE WIRELESS SERVICE

4.1 Mobile Wireless Service Baskets

As in previous studies, the following mobile wireless service element charges, where applicable, are considered for price comparison purposes:

- i) network access/airtime charges (taking into account defined amounts of daytime, evening and weekend minute volumes);
- ii) optional feature charges (e.g., voice mail, call display and others);
- iii) long distance charges for both domestic and international calls;
- iv) short message service (SMS) or text message charges;
- v) data service charges; and
- vi) any other applicable monthly service charges such as emergency, universal service and/or other regulatory fees.

There are several notable charges or costs that are excluded from the calculation of mobile service prices in this study, which include: one-time charges (such as activation fees), upfront handset or device costs and roaming charges. However, a separate comparative analysis of Canadian and U.S. roaming charges is provided in Section 4.4 below.

Five mobile wireless service baskets are included in the study. The fifth basket has been added to the study for the first time this year. Each basket consists of the following main elements:

- **Level 1:** 150 incoming & outgoing minutes per month, with 10% of outgoing minutes treated as long distance.
- **Level 2:** 450 incoming & outgoing minutes per month, with 10% of outgoing minutes treated as long distance, two optional features (voice mail and call display), and 300 texts per month.¹⁹
- **Level 3:** 1,200 incoming & outgoing minutes per month, with 15% of outgoing minutes treated as long distance, full set of optional features, 300 texts and 1 GB data usage per month.

¹⁹ This figure is consistent with the current number of monthly text messages sent by the average Canadian wireless service subscriber; see: <http://cwta.ca/facts-figures>.

- **Level 4:** Unlimited nationwide talk and text (no international calling included), voice mail and call display, and 2 GB data usage per month.
- **Level 5:** Unlimited nationwide talk and text (no international calling included), voice mail and call display, and 5 GB data usage per month.

Table A1.2 in Attachment 1 provides a more detailed summary of each of the service elements and usage assumptions included in all four mobile wireless service baskets.

Prices are measured for each of the mobile wireless service baskets based on a TSP's standard mobile service plan rates. Where applicable, both "pre-paid" and "post-paid" service options are considered. The less expensive of the two options is used to determine the service basket price.

Post-paid plans can be offered on a no-contract or term-contract basis (the most common term being 24 months in the latter case).²⁰ Term-contract service plans typically provide a means for subscribers to purchase a new handset or device at a discounted price. Such plans generally include an implicit or explicit handset cost recovery component in the service plan price. No-contract term, bring-your-own-device or SIM card only, service plans are also often available at lower price points given they do not include a handset cost recovery component. Consistent with previous years' studies, as applicable, the post-paid service plan prices collected for this study are based on term-contract service plans.²¹

4.2 Canadian Mobile Wireless Prices

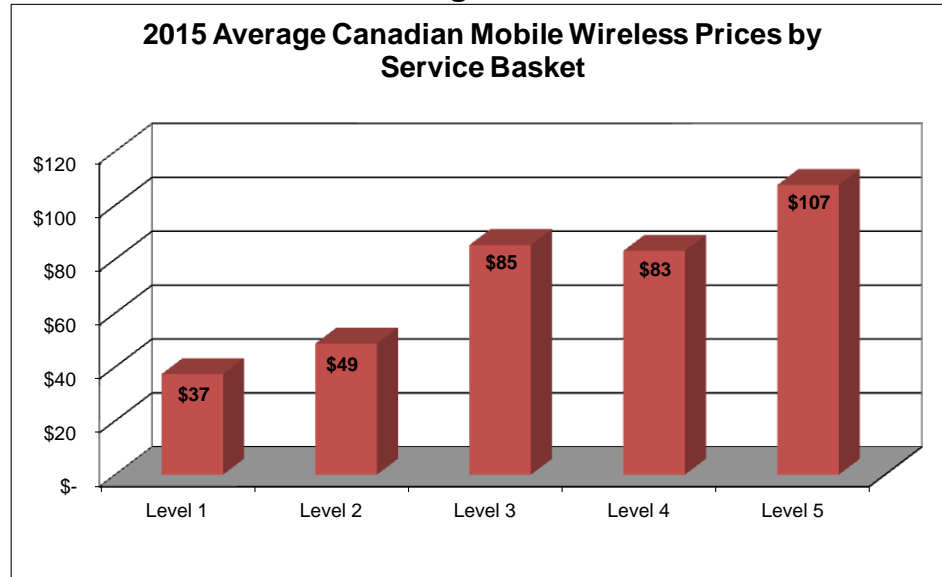
Figure 3 provides a summary of 2015 Canadian prices for all five mobile wireless service baskets. Weighted average prices range from \$37.29 per month for a Level 1 limited talk-only plan to \$107.50 per month for a Level 5 Canada-wide unlimited talk and text plan with 5 GB of data. It is worth noting that the Level 4 basket price of roughly \$83 is slightly less than the Level 3 basket price of roughly \$85 due primarily to the fact that the Level 3 basket includes international long distance calling, whereas the Level 4 basket does not.²²

²⁰ The implementation of the CRTC's Wireless Code in December 2013 (i.e., Telecom Regulatory Policy CRTC 2013-271) had a significant impact on the terms of wireless service plans available in Canada. Under the Wireless Code, contract cancellation fees must be reduced to zero after a period of 24 months. In Canada, many TSPs' standard contract term had previously been 36 months. With the implementation of the Wireless Code, the standard contract term was reduced to 24 months.

²¹ It should also be noted that we have focussed on contract plans covering the most popular and current handset models as opposed to discounted contract plans, where available, featuring previous generation or discontinued handsets.

²² The Level 3 mobile wireless basket includes 18 minutes of calling to the U.S. each month (see Attachment 1, Table A1.2). For the surveyed Canadian wireless service providers,

Figure 3



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Figure 4 below provides a summary of Canadian weighted average mobile wireless prices for each of the Level 1, 2, 3 and 4 service baskets for the five-year period 2011 to 2015. There is no historical price information available for the Level 5 basket as it was included in the study for the first time this year. More detailed historical mobile wireless price information by service basket and city is provided in Table A2.2 in Attachment 2.

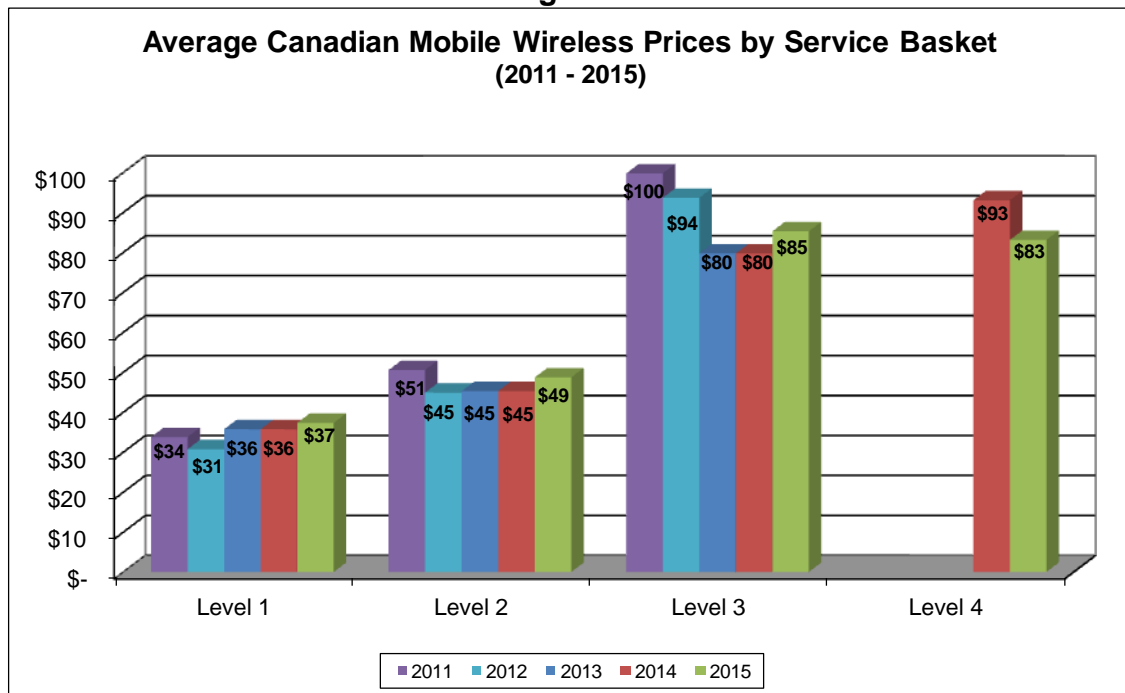
- The Level 1 mobile wireless service basket price increased from \$35.70 in 2014 to \$37.29 in 2015, an increase of 4.4%. Average 2015 Level 1 prices varied by city, from a low of between \$32 and \$33 in Regina and Winnipeg to a high of \$38.21 in Vancouver. Since 2011, Level 1 prices have increased at an average annual rate of 2.5%.
- The Level 2 price increased from \$45.26 in 2014 to \$48.68 in 2015, an increase of 7.6%. Average 2015 Level 2 mobile wireless prices varied from \$46.65 in Winnipeg to \$56.70 in Regina. Despite the price increase this year, Level 2 prices have nevertheless declined at an average annual rate of 0.9% over the last five years.
- The Level 3 service basket price increased from \$79.69 in 2014 to \$85.22 in 2015, an increase of 6.9%. Average 2015 Level 3 mobile wireless prices varied widely by city, from a low of between \$72 and \$74 in Regina and Winnipeg to \$88.32 in Vancouver. Again, despite the price increase

this service element can add on average about \$8.50 to the price of the Level 3 basket (the price varies widely by service provider). This same service element is not included in the Level 4 and 5 mobile wireless baskets.

this year, since 2011, Level 3 prices have declined at an average annual rate of 3.8%.

- The Level 4 service basket price decreased significantly from \$92.99 in 2014 to \$83.08 in 2015, a decline of 10.7%. Average 2015 Level 4 mobile wireless prices also varied widely by city, from a low of between \$62 and \$65 in Regina and Winnipeg to \$91.23 in Halifax. No additional historical price data is available in this case given the Level 4 basket was introduced in last year's study.

Figure 4



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It is worth noting that average mobile wireless prices were consistently found to be lowest among the group of six surveyed cities in Winnipeg and Regina for all five specified mobile wireless service baskets (with the one exception of Regina in the case of the Level 2 service basket).

Since 2008, when Wall Communications conducted its first price comparison study, mobile wireless prices in Canada have generally trended downwards. The Level 1 service basket is the exception. Level 1 prices have increased by 1.9% per year on average or 14 % in total since 2008. Level 2 and 3 prices, on the other hand, have declined at rates of 3.1% and 3.9% per year on average or roughly 20% and 24% in total, respectively, since 2008. Similar long-term trend data is not available for the Level 4 and 5 baskets since they are both recent additions to the study.

Comparison of Incumbent and New Entrant Prices

A comparison of average mobile wireless rates for the incumbent carriers and the new entrants is provided in Table 3 below. The comparison is provided for four cities: Vancouver and Toronto (where new entrants WIND and Mobilicity operate), Montreal (where new entrant Videotron operates) and Halifax (where new entrant Eastlink operates).²³ For each of the three cities, the incumbent carriers include Rogers, Bell and TELUS.

Table 3
2015 Canadian Mobile Wireless Service Rates
Incumbents versus New Entrants

Baskets	Vancouver	Toronto	Montreal	Halifax	Average
Level 1 Basket (150 min/month)					
Incumbents	\$38.23	\$38.23	\$38.18	\$38.66	\$38.33
New Entrants	\$25.68	\$25.68	\$31.95	\$25.55	\$27.21
<i>Percentage Differential</i>	-33%	-33%	-16%	-34%	-29%
Level 2 Basket (450 min and 300 text per month)					
Incumbents	\$50.62	\$48.95	\$49.35	\$49.38	\$49.57
New Entrants	\$35.05	\$35.05	\$47.35	\$28.55	\$36.50
<i>Percentage Differential</i>	-31%	-28%	-4%	-42%	-26%
Level 3 Basket (1200 min, 300 text and 1GB data per month)					
Incumbents	\$89.30	\$89.30	\$84.70	\$89.73	\$88.26
New Entrants	\$45.65	\$45.65	\$67.35	\$64.55	\$55.80
<i>Percentage Differential</i>	-49%	-49%	-20%	-28%	-37%
Level 4 Basket (unlimited Canada-wide talk & text and 2GB data per month)					
Incumbents	\$91.67	\$91.67	\$77.07	\$92.10	\$88.12
New Entrants	\$42.50	\$42.50	\$67.35	\$65.55	\$54.48
<i>Percentage Differential</i>	-54%	-54%	-13%	-29%	-38%
Level 5 Basket (unlimited Canada-wide talk & text and 5 GB data per month)					
Incumbents	\$121.67	\$121.67	\$95.40	\$122.10	\$115.21
New Entrants	\$42.50	\$42.50	\$87.35	na	\$57.45
<i>Percentage Differential</i>	-65%	-65%	-8%		-50%

Unweighted averages used in all cases.

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As shown in the table, for the Level 1 mobile wireless service basket, the prices offered by new entrants are between 16% and 33% lower than those of the incumbents, and 29% lower on average for the four cities combined. The relative price discounts available from the new entrants in the case of the Level 2 service basket range between 4% to 42% by city and, for all cities combined, 26% on average. The differences are greater still in the case of the Level 3 and Level 4 service baskets, where the price discounts offered by new entrants relative to the

²³ Note that former new entrant Public Mobile has been excluded from this year's study given that it is now owned by TELUS.

incumbents' services range between 13% to 54% by city and, for all cities combined, 37% to 38% on average. The Level 5 differential is even larger still at 50% on average, which is driven by the significantly lower prices offered by WIND and Mobilicity relative to the incumbents. It is worth noting that the WIND and Mobilicity service plans included in both the Level 3, 4 and 5 service baskets provide what is advertised as unlimited data,²⁴ whereas the incumbents' data plans are capped, as are the plans offered by Videotron and Eastlink. As well, Eastlink currently does not offer an individual line mobile wireless plan with more than 3 GB of data; consequently, it is marked as "na" in Halifax for Level 5.

Compared to last year's study, the differentials between the incumbents' and new entrants' mobile wireless prices have effectively remained the same in the case of the Level 1 basket, increased significantly in the case of the Level 2 basket (i.e., more than doubled), but otherwise narrowed in the case of the Level 3 and 4 service baskets (i.e., shrunk by 7% and 11%, respectively).

Incumbent Flanker Brand Prices

Incumbent flanker brand services Bell Virgin, Rogers Fido, and TELUS Koodo are available across the country. On the other hand, for the six Canadian cities included in this study, Rogers Chatr is only available in Montreal, Toronto and Vancouver, but not Halifax, Winnipeg or Regina.

Table 4 below provides a summary of incumbent primary brand, incumbent flanker brand and new entrant mobile wireless service prices for 2015 in Halifax, Montreal, Toronto and Vancouver for each of the five mobile wireless service baskets. It also provides percentage rate differentials between the incumbents' primary and flanker brands as well as the incumbents' flanker brands and the new entrants. As the table shows, the incumbents' flanker brand prices are considerably lower than those of the incumbents' primary service brands. The Level 1, 2 and 3 flanker brand prices are 18%, 23% and 20% lower compared to the incumbents' prices, respectively, for all four cities combined. The Level 4 and 5 flanker brand prices are also lower, but to a lesser degree, with price differentials of 13% and 10%, respectively, for all four cities combined.

Compared to last year's study, the differentials between the incumbents' flanker and primary brand service prices have narrowed. The differentials in the cases of the Levels 1 and 2 baskets are in the order of 5 percentage points narrower, whereas the differentials for the Levels 3 and 4 baskets have shrunk more significantly by roughly 10 percentage points in the first case and roughly 20 percentage points in the latter case.

²⁴ Both unlimited data plans are, however, subject to fair use policies that result in speed throttling once usage levels of 5 or 6 GB of data usage in a month is exceeded, depending on the plan.

Table 4
2015 Canadian Mobile Wireless Service Rates
Incumbents, Incumbent Flanker Brands and New Entrants

Baskets	Vancouver	Toronto	Montreal	Halifax	Average
Level 1 Basket (150 min/month)					
1. Incumbents	\$38.23	\$38.23	\$38.18	\$38.66	\$38.33
2. Incumbent Flanker Brands	\$31.31	\$31.21	\$31.49	\$32.10	\$31.53
3. New Entrants	\$25.68	\$25.68	\$31.95	\$25.55	\$27.21
<i>Percentage Differential 2 vs 1</i>	<i>-18%</i>	<i>-18%</i>	<i>-18%</i>	<i>-17%</i>	<i>-18%</i>
<i>Percentage Differential 3 vs 2</i>	<i>-18%</i>	<i>-18%</i>	<i>1%</i>	<i>-20%</i>	<i>-14%</i>
Level 2 Basket (450 min and 300 text per month)					
1. Incumbents	\$50.62	\$48.95	\$49.35	\$49.38	\$49.57
2. Incumbent Flanker Brands	\$38.11	\$38.11	\$38.51	\$38.63	\$38.34
3. New Entrants	\$35.05	\$35.05	\$47.35	\$28.55	\$36.50
<i>Percentage Differential 2 vs 1</i>	<i>-25%</i>	<i>-22%</i>	<i>-22%</i>	<i>-22%</i>	<i>-23%</i>
<i>Percentage Differential 3 vs 2</i>	<i>-8%</i>	<i>-8%</i>	<i>23%</i>	<i>-26%</i>	<i>-5%</i>
Level 3 Basket (1200 min, 300 text and 1GB data per month)					
1. Incumbents	\$89.30	\$89.30	\$84.70	\$89.73	\$88.26
2. Incumbent Flanker Brands	\$74.27	\$74.27	\$59.67	\$74.70	\$70.72
3. New Entrants	\$45.65	\$45.65	\$67.35	\$64.55	\$55.80
<i>Percentage Differential 2 vs 1</i>	<i>-17%</i>	<i>-17%</i>	<i>-30%</i>	<i>-17%</i>	<i>-20%</i>
<i>Percentage Differential 3 vs 2</i>	<i>-39%</i>	<i>-39%</i>	<i>13%</i>	<i>-14%</i>	<i>-21%</i>
Level 4 Basket (unlimited Canada-wide talk & text and 2GB data per month)					
1. Incumbents	\$91.67	\$91.67	\$77.07	\$92.10	\$88.12
2. Incumbent Flanker Brands	\$80.00	\$80.00	\$65.40	\$80.43	\$76.46
3. New Entrants	\$42.50	\$42.50	\$67.35	\$65.55	\$54.48
<i>Percentage Differential 2 vs 1</i>	<i>-13%</i>	<i>-13%</i>	<i>-15%</i>	<i>-13%</i>	<i>-13%</i>
<i>Percentage Differential 3 vs 2</i>	<i>-47%</i>	<i>-47%</i>	<i>3%</i>	<i>-19%</i>	<i>-29%</i>
Level 5 Basket (unlimited Canada-wide talk & text and 5 GB data per month)					
1. Incumbents	\$121.67	\$121.67	\$95.40	\$122.10	\$115.21
2. Incumbent Flanker Brands	\$107.67	\$107.67	\$89.73	\$108.10	\$103.29
3. New Entrants	\$42.50	\$42.50	\$87.35	na	\$57.45
<i>Percentage Differential 2 vs 1</i>	<i>-12%</i>	<i>-12%</i>	<i>-6%</i>	<i>-11%</i>	<i>-10%</i>
<i>Percentage Differential 3 vs 2</i>	<i>-61%</i>	<i>-61%</i>	<i>-3%</i>		<i>-44%</i>

Unweighted averages used for incumbents and new entrants. Incumbent flanker brands given equal weight (i.e., Bell Virgin, Rogers Fido, TELUS Koodo given 1/3 weight each); although Rogers Chatr assumed to have a relatively limited market shares as in the case of the new entrants in those cities where it is available.
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Table 4 also includes the new entrants' average prices for the same four cities and provides percentage-based price differentials between the new entrants' and incumbents' flanker brand prices. The new entrants' prices are generally lower than the incumbents' flanker brand prices. However, there are several cases where the reverse is true, all of which apply in the case of Videotron in the city of Montreal. The incumbent flanker brand and new entrant (i.e., Videotron) prices are very close in the case of the Level 1 and 4 service baskets in Montreal, with

Videotron's prices being slightly higher in both cases. In contrast, for Levels 2 and 3, Videotron's prices are 23% and 10% higher the incumbent flanker brand average prices.

Compared to last year, the price differentials between new entrant and incumbent flanker brand prices have generally widened, whereas the differentials between new entrant and incumbent primary brand prices have largely remained unchanged. In other words, average prices offered by incumbent flanker brands rose and are now closer to those of the incumbents' primary brands, while the new entrants' price discounts relative to the incumbents' primary brands remained the same.

A comparison of the incumbent's primary and flanker brand mobile wireless service prices for all six cities and for both 2014 and 2015 is provided in Table A2.3 in Attachment 2.

Reseller or MVNO Prices

Mobile wireless service prices offered by two resellers or mobile virtual network operators (MVNO) – i.e., Primus and PC Mobile – were also collected as part of this year's study. Table 5 provides a summary of the national-level price differentials between the incumbents' primary brands and MVNOs for each of the five mobile service baskets.

Table 5
2015 Canadian Mobile Wireless Service Rates
Incumbents versus Resellers/MVNOs

Baskets	Incumbents	Resellers/MVNOs	Percentage Differential
Level 1	\$38.33	\$32.83	-14%
Level 2	\$49.57	\$37.00	-25%
Level 3	\$88.26	\$69.97	-21%
Level 4	\$88.12	\$80.40	-9%
Level 5	\$115.21	\$140.21	22%

Unweighted averages for Halifax, Montreal, Toronto and Vancouver.

Resellers/MVNOs include Primus and PC Mobile.

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For Levels 1, 2 and 3, reseller/MVNO prices are 14% to 25% below those of the incumbents primary brand services. In effect, they are generally comparable in terms of level to those offered by the incumbent flanker brands. Similarly, like the flanker brands, the price gap between the reseller/MVNO and incumbent Level 4 prices is relatively narrow at 9%. On the other hand, for Level 5, the average reseller/MVNO price significantly exceeds the incumbents' price by 22%.

It should be noted in this respect that Primus does not currently offer service plans that satisfy the requirements of either the Level 4 or Level 5 service baskets; consequently, the Level 4 and 5 differentials are strictly a reflection of PC Mobile's pricing relative to the incumbents.

4.3 International Mobile Wireless Service Prices

As noted in previous studies, there are a number of important pricing differences that should be borne in mind when comparing Canadian and foreign mobile wireless prices.

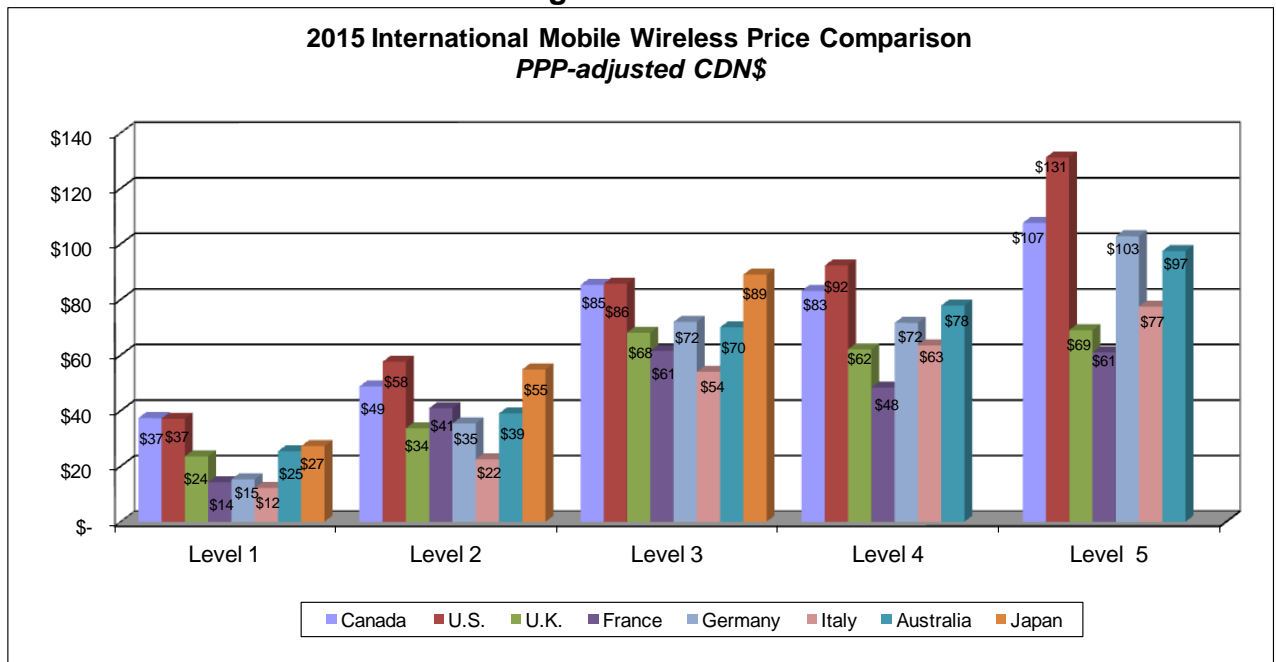
- *Price Structure:* The pricing of mobile wireless service plans in the U.K., Germany, Italy, France, Australia and Japan differs significantly compared to Canada (as well as the U.S.). Mobile wireless prices in Europe, Australia and Japan are set on a "calling party pays" basis, under which mobile customers pay only for outgoing calls. In contrast, Canadian and U.S. pricing plans are based on a "receiving party pays" approach, under which customers pay for incoming and outgoing calls. Unlike Canada and the U.S., some mobile wireless service plans in Europe, Australia and Japan also include per call setup charges and/or different per minute call rates to landline versus mobile customers, as well as potentially different per minute rates for on-net versus off-net mobile calls. However, as in Canada, unlimited national calling plans and service add-ons that cover calls to both fixed and mobile and both on and off-net mobile lines are now commonly available.
- *Regulatory Fees:* Regulatory fees of one form or another apply in the cases of Canada, Japan and the U.S. In Canada, there is typically an explicit emergency 9-1-1 fee and, in some cases, universal service fees (as in the case of Japan). In the U.S., there are a variety of regulatory fees, federal and state USF surcharges and other fees.²⁵ For this year's study, we have estimated these charges based on information collected in previous pricing studies and, where applicable, updated USF fees and carrier-specific regulatory cost recovery charges.

Figure 5 below provides a comparison of current mobile wireless prices for Canada and the surveyed foreign jurisdictions for each of the five wireless service baskets. All prices are expressed in PPP-adjusted Canadian dollars and exclude retail sales taxes. Table A3.2 and Figures A3.2 a, b and c in Attachment 3 provide more detailed historical international mobile wireless price information for the period 2008 to 2015, as applicable, for each country and basket.

²⁵ See, for instance, <http://www.fcc.gov/cgb/phonebills/WirelessPhonebill.html>.

- In the case of the Level 1 mobile wireless service basket, the Canadian average price of \$37.29 is the highest in the group of surveyed countries, although it is only marginally higher than the U.S. The Canadian Level 1 basket price is also well above the average price for the group of surveyed foreign jurisdictions of just over \$22. The substantially lower prices found in Europe (i.e., France, Germany and Italy) are due to the availability of exceptionally low-priced prepaid voice services.
- For the Level 2 service basket, the Canadian average price of \$48.68 falls well above the average price for the group of surveyed foreign jurisdictions as a whole of close to \$42. Canada ranks sixth among the group of countries in this case, below only the measured prices for the U.S. and Japan.
- For the Level 3 wireless service basket, the average Canadian monthly rate of \$85.22 again falls above the average for the group of surveyed foreign jurisdictions of roughly \$71.50. In this case, Canada once again ranks sixth among the group of eight countries, below only the measured prices for the U.S. and Japan.
- In the case of the Level 4 basket, which includes unlimited nationwide talk and text along with 2 GB of monthly data usage, the Canadian average price of \$83.08 is similarly positioned. It is considerably above the Level 4 basket average price for the surveyed foreign jurisdictions of just over \$69. Here again, Canada ranks sixth among the group of countries (excluding Japan), below only the measured average price for the U.S. While unlimited national talk plans are available in Japan, none of the surveyed Japanese wireless service providers included in the study currently offers unlimited off-net texting; consequently, Japan is excluded from the Level 4 and 5 basket categories (as was the case in last year's study).
- Lastly, for the Level 5 basket, which includes unlimited nationwide talk and text along with 5 GB of monthly data usage, the Canadian average price of \$107.50 once again falls well above the Level 5 basket average price for the surveyed foreign jurisdictions of roughly \$90. In this case, Canada also ranks sixth among the group of countries (excluding Japan), below only the measured average price for the U.S.

Figure 5



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The Level 1 to 3 mobile wireless service baskets have been included in this study since the outset in 2008. Canada's relative mobile wireless service price ranking for these three baskets has not changed significantly between 2008 and 2014. Canada has tended to be on the high-side of the group, but generally below the U.S. and, since its introduction to the study in 2010, Japan. The Level 4 basket was introduced to the study for the first time last year and the Level 5 basket has been included in the study for the first time this year; consequently there is very little trend information in these cases at this point in time. Nevertheless, Canada's Level 4 and 5 rankings are similar to the Level 1 to 3 baskets – i.e., it falls on the high-side of the group. It is worth noting that surveyed average prices for European countries included in the study, the U.K. and France since 2008, and as of last year, Germany and Italy, have consistently fallen considerably below those in Canada for all defined mobile wireless service baskets.

In sum, Canada's Level 1 (low usage) mobile wireless service basket price is the highest of the group of foreign jurisdictions included in this study. In the case of the Level 2 to Level 5 service baskets, average Canadian prices are consistently at the upper-end of the group of surveyed countries.

4.4 U.S. Incumbent and Regional Service Provider Prices

In Section 4.2 above, comparisons of Canadian incumbent, incumbent flanker brand and new entrant mobile wireless services prices are provided. In this section, for similar comparative purposes, prices offered by U.S. incumbent and

regional mobile wireless service providers are also contrasted. The U.S. incumbents include Verizon, AT&T and Sprint, and the U.S. regionals include Cricket, MetroPCS, U.S. Cellular and C-Spire.²⁶

Table 6 provides a comparison of U.S. incumbent and regional brand prices for each of the five defined mobile wireless service baskets.

Table 6
2015 U.S. Mobile Wireless Price Comparison
Incumbents versus Regional Brands

National Averages in \$USD

Baskets	Level 1	Level 2	Level 3	Level 4	Level 5
U.S. Incumbents	\$28.58	\$44.44	\$66.09	\$71.17	\$101.17
U.S. Regionals	\$33.08	\$33.84	\$56.32	\$50.10	\$69.19
Percentage Differential	16%	-24%	-15%	-30%	-32%

Incumbents include Verizon, AT&T and Sprint and the Regional brands include Cricket, MetroPCS, US Cellular and C Spire

US national averages are market share weighted.

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As was the case in last year's study, the U.S. regionals' average Level 1 basket price is once again higher than the U.S. incumbents' average Level 1 basket price. However, the differential has narrowed significantly this year because the average U.S. incumbents' Level 1 basket price increased significantly this year relative to last, while the U.S. regionals' average price declined slightly. On the other hand, the U.S. regionals' average prices for the other four mobile wireless service baskets are consistently lower than the U.S. incumbents by a substantial margin – i.e., from 15% lower in the case of the Level 2 basket to 32% lower in the case of the Level 5 basket. Compared to last year, the differentials have widened considerably in the case of the Level 2 basket, but narrowed somewhat in the cases of the Level 3 and 4 baskets. The Level 5 basket is new to the study this year, consequently no comparison to last year is possible.

As shown in Section 4.2 above, Canadian incumbent flanker brand and new entrant prices were found to be consistently lower than the Canadian incumbents' prices for all five mobile wireless service baskets. The price discounts offered by Canadian new entrants relative to the Canadian incumbents are generally higher than those of the U.S. regionals relative to the U.S. incumbents – e.g., the

²⁶ By their very nature, U.S. regional mobile service providers do not provide services nationally throughout the U.S. and, more specifically, they do not necessarily market mobile services in each of the four selected markets in the U.S. used in this study (i.e., Boston, Kansas City, Minneapolis and Seattle). In fact, of the four surveyed regional service providers, C-Spire does not market services in any of these four selected markets. They do however offer roaming coverage in these markets. For the purposes of this study, therefore, U.S. regional mobile service provider prices have been collected for each of the defined mobile wireless service baskets and a weighted average price for the four service providers was determined using current subscriber counts.

average Canadian new entrant Level 5 basket discount is 50% (see Table 3 above) whereas the U.S. regionals' average Level 5 basket discount is 32%. On the other hand, the price discounts offered by Canadian flanker brands are more similar to those of the U.S. regionals on average. One exception in this respect is found in the case of the Level 1 basket, where Canadian flanker brands offer a significant discount whereas the U.S. regionals' average price is higher than that of the incumbents. As well, in the case of the Level 4 and 5 baskets, the Canadian flanker brands offer a much more limited price discount compared to the U.S. regionals (i.e., in the range of 10% versus 30%, respectively – see Table 4 above).

It is worth adding that relative to the U.S. incumbents, the total number of subscribers currently served by the four U.S. regionals included in the study is very small (i.e., roughly 260 million for the three surveyed incumbents, which excludes T-Mobile, versus about 20 million for the four surveyed regionals, respectively). Consequently, the surveyed U.S. regionals account for a very small relative market share.

It should also be noted that the U.S. regional carriers are not strictly comparable to the Canadian wireless new entrants. The U.S. regionals have generally been in operation for a decade or more whereas the Canadian new entrants are relatively recent start-ups, the oldest (WIND) being in operation only since late 2009. Moreover, two of the largest regional carriers (Cricket and MetroPCS) have been acquired by larger U.S. mobile wireless service providers such that they now have more in common with the Canadian flanker brands than the Canadian new entrants. On the other hand, the U.S. regionals do share the trait of being regionally based (like Canadian new entrants Eastlink and Videotron).

In sum, like the Canadian wireless entrants and incumbent flanker brands, the U.S. regional carrier average prices are generally considerably lower than the U.S. incumbents' average prices for all mobile service baskets other than the Level 1 (low use voice services) basket. The differentials between the Canadian new entrants and incumbents average prices, however, are generally considerably larger than those between the U.S. regionals and incumbents.

4.5 Canada-U.S. Roaming Prices

As a separate price comparison exercise, rate information on voice, text and data roaming services available to Canadian and American mobile wireless service consumers when traveling to the U.S. and Canada, respectively, has been collected as part of this study. In this respect, U.S. roaming services offered by Canadian incumbent, incumbent flanker brand and new entrant wireless service providers have been taken into account. As well, Canadian roaming services offered by U.S. incumbent and regional wireless service providers have also been taken into account.

The wireless service providers surveyed for this study generally offer two types of international roaming services. The first is a "pay-as-you-go" roaming service option under which users pay per-use rates for any voice, text or data usage they incur while traveling abroad. The second is a travel or roaming add-on package option under which users can choose to pay a fixed fee for defined amounts of call minutes, texts, and/or data. Typically, roaming add-on packages remain in effect for a 30 day period of time. With an add-on package, per unit usage rates are typically discounted significantly relative to base pay-as-you-go rates. When the usage allowance under an add-on plan is consumed, then either specific overage rates or base rates apply for any additional usage. Alternatively, the add-on plan could be renewed for another 30 days.

Canadian incumbent and, to a somewhat lesser degree, incumbent flanker brand wireless service providers offer a wide range of stand-alone U.S.-specific voice, text or data roaming add-on packages as well as bundled talk & text and talk, text & data roaming add-on packages. On the other hand, the new entrants offer far fewer U.S.-specific roaming add-on packages and, instead, focus more so on offering pay-as-you-go roaming rates.

In the U.S., the surveyed incumbents (i.e., Verizon, AT&T and Sprint) offer a variety of Canada-specific stand-alone voice, text or data roaming add-on packages, as well as a limited number of bundled talk & text and talk & text & data roaming add-on packages. In contrast, the surveyed U.S. regional wireless service providers offer very limited roaming services in Canada. For instance, C-Spire only offers pay-as-you-go Canadian roaming services. U.S. Cellular offers a single daily roaming plan for Canada covering voice calls,²⁷ but neither texting nor data. Cricket and MetroPCS do not offer any roaming services in Canada.

Base "Pay-As You-Go" Roaming Rates

Table 7 below provides a comparison of Canadian and U.S. pay-as-you-go roaming rates for Canadians traveling to the U.S. and conversely Americans traveling to Canada. The Canadian wireless service providers' rates are shown in Canadian dollars and the U.S. rates are shown in PPP-adjusted Canadian dollars.

²⁷ For USD\$3.00 per day, calls while roaming in Canada are USD\$0.99 per minute.

Table 7
2015 Comparison of Average Canadian and U.S. Roaming Rates
Base (Pay-As-You-Go) Rates

Services	Canadian Carriers			U.S. Carriers	
	Incumbents	Flankers	New Entrants	Incumbents	Regionals
	<i>Roaming Rates while in the U.S.</i>			<i>Roaming Rates while in Canada</i>	
		(CDN\$)		(PPP-Adj CDN\$)	
Voice (per minute)	\$1.49	\$1.23	\$0.29	\$1.07	\$1.28
Text (per text)	\$0.61	\$0.55	\$0.20	\$0.45	\$0.00
Data (per MB)	\$5.00	\$6.00	\$0.68	\$8.40	\$2.58

*Unweighted averages used in all cases.
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In the case of the Canadian carriers, the incumbents' and incumbent flankers' average pay-as-you-go roaming rates are generally similar, with the incumbent flankers offering somewhat lower average U.S. call and text roaming rates, but higher data usage roaming rates.²⁸ In contrast, the average pay-as-you-go roaming rates offered by the new entrants are significantly lower at \$0.29 per call minute, \$0.20 per text and \$0.68 per MB of data.

The U.S. incumbent average voice and text pay-as-you-go roaming rates are somewhat lower than the Canadian incumbents at \$1.07 and \$0.45, respectively. On the other hand, the average pay-as-you-go data roaming rate is considerably higher, at \$8.40 per MB. As noted, the surveyed U.S. regional wireless service providers provide very limited roaming services in Canada. In fact, the roaming rates shown in Table 7 are those of C-Spire Wireless alone, since it was the only U.S. regional wireless service provider of the four surveyed that currently has pay-as-you-go roaming rates in effect. In its case, pay-as-you-go roaming rates are \$1.28 per call minute and roughly \$2.58 per MB of data. Texts are free.

There has been relatively little change in these rates since last year; consequently, there is little change in the relative pricing between the different service providers within Canada and the U.S.

It should be noted that, with respect to the Canadian incumbents, Rogers offers a "Roam Like Home" service feature for customers who subscribe to a Rogers "Share Everything" mobile plan. Rogers' Share Everything plans include unlimited Canada-wide talk and text along with a customer-selected level of monthly sharable data. For \$5 per day (with a monthly maximum of \$50), the Roam Like Home feature provides Share Everything subscribers with unlimited voice (including U.S.-Canada long distance), texting as well as no-charge data

²⁸ Note that SaskTel offers a variable base "pay as you go" U.S. roaming data usage rate (of \$3 to \$10/MB) which depends on a user's Canadian data plan. In the case of a user with a 1 GB data plan, the base U.S. roaming data usage rate is \$6/MB (which is the rate used to calculate the incumbent average in Table 7).

(up to the limits of the customer's specific Share Everything data allowance) while roaming in the U.S. The daily \$5 fee is triggered whenever a Share Everything subscriber either makes a call, sends a text or uses data while in the U.S. This feature provides potentially very low cost per minute calling, texting and data usage while roaming in the U.S.²⁹ As structured, the Rogers' Roam Like Home feature is equivalent to a standard pay-as-you-go roaming option as offered by the other surveyed service providers and, therefore, is not included in the pay-as-you-go rate comparison shown in Table 7 above.³⁰ However, new roaming service options such as Rogers' Roam Like Home feature potentially offer considerably lower per-use U.S. roaming rates than the pay-as-you-go rates shown in the table, including the Canadian new entrants.

Add-on Package Stand-alone and Bundled Roaming Rates

As noted, there are a wide variety of stand-alone and bundled add-on packages available in Canada and the U.S. To keep the add-on package rate comparison manageable, Table 8 below focuses on average prices and implicit usage rates for lower-cost stand-alone voice, text and data roaming add-on packages – i.e., add-ons that cost in the range of \$5 to \$30 per month. The comparison is also limited to stand-alone add-on packages (i.e., providing either voice, text or data roaming service on a standalone basis). Implicit usage rates are calculated by dividing the add-on package price by the corresponding usage allowance³¹ or, where the plan simply offers a discounted usage rate, the implicit usage rate is calculated based on the overall cost of the add-on (including an assumed monthly usage quantity) divided by the assumed usage quantity.³²

²⁹ For example, if a Rogers Share Everything subscriber made 20 minutes of calls, sent 20 text messages and used 20 MB of data on a given day while in the U.S., the effective roaming rates could be considered to be 10 cents a minute for calls, 5 cents for each text and 10 cents for each MB of data used.

³⁰ Note as well that Rogers offers a daily U.S. roaming data usage plan for \$7.99 which includes data usage up to 50 MB per day for subscribers not on a Share Everything plan. This plan provides U.S. roaming data rates of up to \$7.99 for 1 MB to as little as \$0.16 per MB for the full 50 MB daily allowance. Again, like the Rogers Roam Like Home feature, this is not strictly equivalent to a "pay-as-you-go" rate option and, therefore, is not included in the rate comparison shown in Table 7.

³¹ For example, the implicit price of a \$10 voice roaming add-on package which provides up to 50 minutes is calculated as $\$10/50 = \0.20 per minute.

³² For example, the implicit price of a \$3 voice roaming add-on package which provides a discounted calling rate of \$0.20 per minute, assuming 50 minutes of usage, is $(\$3 + 50 * \$0.20)/50 = \$0.26$ per minute.

Table 8
2015 Comparison of Average Canadian and U.S. Roaming Rates
Lowest Cost Stand-alone Add-on Package Rates

Services	Canadian Carriers			U.S. Carriers	
	Incumbents	Flankers	New Entrants	Incumbents	Regionals
	Roaming Rates while in the U.S.			Roaming Rates while in Canada	
	(CDN\$)			(PPP-Adj CDN\$)	
Average Add-on Package Price					
Stand-alone Voice Add-on	\$17.50	\$17.50	\$20.00	\$20.73	na
Stand-alone Text Add-on	\$14.00	\$11.67	\$15.00	na	na
Stand-alone Data Add-on	\$17.50	\$7.50	\$20.00	\$35.64	na
Implicit Usage Price*					
Voice (per minute)	\$0.44	\$0.29	\$0.20	\$0.27	na
Text (per text)	\$0.10	\$0.03	\$0.03	na	na
Data (per MB)	\$0.71	\$0.23	\$0.20	\$0.52	na

* Implicit price determined by dividing the cost of the add-on by the corresponding usage allowance or, where the add-on provides a discounted usage rate, by dividing the cost of the add-on plus an assumed quantity of monthly usage by the assumed usage quantity. Unweighted averages used in all cases.

"na" indicates that no add-ons available from any of the surveyed service providers.

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As shown in the table, the average price of lower-cost stand-alone voice, text and data roaming add-on packages offered by the Canadian incumbents and the incumbents' flanker brands are similar and fall between roughly \$7.50 to \$20. The implicit usage rates for these plans are considerably lower than corresponding pay-as-you-go rates. For instance, average implicit voice rates are between \$0.29 and \$0.44 per minute, average implicit messaging rates are between \$0.03 and \$0.10 per text, and average implicit data rates are between \$0.23 and \$0.71 per MB. Compared to last year, all three of these implicit per use rates have declined considerably.

The Canadian new entrants' average stand-alone voice, text and data add-on package rates are lower at between \$15 and \$20. For the new entrants, the average implicit voice rate is \$0.20 per minute, the average implicit texting rate is \$0.03 per text and the average data usage rates is \$0.20 per MB. All of these implicit usage rates are well below those of the incumbents, but only slightly less than the incumbent flankers. Compared to last year, the new entrants' voice roaming rates have declined slightly, whereas the per-text rate is the same. As well, a stand-alone roaming data add-on is available this year, which was not the case last year. This was due to the inclusion of Eastlink as a mobile wireless new entrant in this year's study.

The U.S. incumbents' average add-on roaming package prices are similar in the case of voice add-ons, but more expensive for data add-ons. A stand-alone text add-on is no longer available from any of the surveyed U.S. incumbents (unlike

last year). The U.S. incumbents' average implicit roaming price for voice calling of \$0.27 per minute is considerably lower than the Canadian incumbents, but only marginally lower than the Canadian incumbent flankers. The U.S. incumbents' average implicit roaming price for data of \$0.52 per MB is considerably lower than the Canadian incumbents; it is higher than that of the Canadian incumbent flankers and new entrants. These rates are similar to those measured last year.

As noted, Table 8 focuses on lower-cost stand-alone voice, text and data roaming add-on packages. However, there is a variety of more expensive stand-alone and various bundled roaming add-on packages offered by the Canadian incumbents (i.e., ranging in price up to \$100 per month) that offer progressively cheaper implicit voice, text and data roaming per-use prices. Under alternative add-on packages, unlimited voice calling and texting options are available, and per-use data rates can be as low as a few cents per MB. Among the new entrants, WIND offers \$15 U.S. roaming add-on bundle which provides 2400 voice minutes and texts and (subject to fair use policy) unlimited data U.S.

In the case of the U.S. incumbents, there are a variety of additional stand-alone and bundled roaming add-on packages that range in price up to USD\$125 per month. Some of these add-ons provide voice rates as low as a few cents per minute, unlimited texting and implicit data usage rates as low as USD\$0.15 per MB. Consequently, while these plans are comparable to those available from the Canadian incumbents, however, the minimum available implicit data usage roaming rates are somewhat higher than those available to Canadian subscribers when roaming in the U.S.

In sum, the U.S. incumbents' average pay-as-you-go roaming call and text rates in Canada were found to be lower than the Canadian incumbents' and incumbent flankers' comparable roaming rates in the U.S., whereas the reverse was found in the case of data roaming rates. The service providers in both countries also offer a variety of roaming add-on packages that provide progressively lower call, text and data roaming rates (depending on usage levels). When stand-alone talk, text and data add-on plans are taken into account, the U.S. incumbents' voice and data roaming rates are slightly lower than those of the Canadian incumbents, but are otherwise similar to those of the Canadian incumbent flankers and higher than those of the Canadian new entrants.

On balance, a comparison of cross-border roaming rates offered by the Canadian and U.S. incumbents alone does not suggest that consumers are significantly better off in either country as far as the overall set of available roaming charges is concerned. On the other hand, the Canadian incumbent flankers and new entrants offer far lower roaming rates than the Canadian incumbents, whereas the U.S. regional carriers offer either no roaming services in Canada whatsoever or, where they do, their discounts relative to the U.S. incumbents are more limited. Consequently, the Canadian incumbent flankers'

and new entrants' roaming rates generally compare more favourably to those available from both the U.S. incumbents and regionals.

5.0 BROADBAND INTERNET SERVICE

5.1 Broadband Internet Service Baskets

The four broadband service baskets included in the study are defined in terms of broadband service speed and monthly data usage:

- **Level 1:** *Speed:* "basic" Internet service with advertised³³ download speed of up to **3.0 Mbps**.
Data usage per month: 10 GB.
- **Level 2:** *Speed:* "average" (Canadian) high-speed Internet service with advertised download speed of **4.0 to 15 Mbps** (targeted speed in the upper end of the range).³⁴
*Data usage per month: 50 GB.*³⁵
- **Level 3:** *Speed:* high-speed Internet service with advertised download speed of **16 to 40 Mbps** (targeted speed in the upper end of the range).
Data usage per month: 100 GB.
- **Level 4:** *Speed:* high-speed Internet service with advertised download speed of **over 40 Mbps** (targeted speed in the upper end of the 41 to 100 Mbps range).
Data usage per month: 150 GB.

Modem rental fees are also taken into account since they are mandatory in some instances. In other cases, where the modem is not included but must be purchased by the customer, the cost of the required equipment is amortized over 24 months. Otherwise, one-time installation or activation fees are excluded.

³³ It should be noted that "advertised" speeds can differ from "actual" speeds for a variety of reasons and that the range of any such differences can vary by technology and geographic location. For the purpose of this study, any such variations are assumed to be roughly equal on a relative basis across the broadband services included in this study.

³⁴ The CRTC 2014 CMR, Table 5.3.10, page 185, indicates that roughly 59% of Canadian broadband users subscribe to broadband services with download speeds of between 5 and 15 Mbps.

³⁵ According to the CRTC 2014 CMR, page 171, the average Canadian broadband user downloaded and uploaded roughly 51 GB of data per month.

Some Internet service providers (ISPs) apply monthly data usage caps to their broadband service plans. Where they are applied, they are typically set on the basis of a monthly data allowance (GB/month), with overage fees applied when the data allowance is exceeded. Overage or additional data fees are included in the study if assumed usage levels exceed any applicable data caps. None of the ISPs surveyed in France, Germany, Italy, Japan, the U.K. or the U.S. apply data caps. The only ISPs included in this study that apply data caps were found in Canada and Australia.³⁶ In virtually all of these cases, the applicable data caps were high enough that no overage fees are incurred given the data usage assumptions adopted for the defined broadband service baskets.

There was one exception in this latter respect. In Toronto, Rogers currently offers a broadband service plan which satisfies the speed requirements of the Level 2 service basket (i.e., 10 Mbps download speed); however, the data cap on the plan was 25 GB which is 25 GB less than the Level 2 monthly data usage requirement of 50 GB per month. The overage fee Rogers charges under the 10 Mbps service plan is \$4 per GB. Applying the monthly overage charge in this case would add an additional \$100/month to the cost of the plan making it uneconomic for the purpose of the Level 2 service basket (i.e., it would be cheaper to move to a higher speed service which includes a higher data cap than pay the overage fee). Therefore, the Rogers 10 Mbps plan was not included in the study. Further, Rogers' 30 Mbps and 60 Mbps plans do not currently include sufficient monthly data allowances to satisfy the monthly data usage requirements for the Level 3 and 4 service baskets. In both of these cases, however, a 200 GB data add-on is available for \$15 per month, which was added to the cost of Rogers' Level 3 and 4 services. This same data add-on is not currently available with Rogers' 10 Mbps service plan.

5.2 Canadian Broadband Service Prices

Figure 6 below provides a summary of Canadian weighted average broadband Internet access service prices for the Levels 1 to 4 service baskets for the period 2011 to 2015. More detailed historical broadband price information by city is provided in Table A2.4 in Attachment 2.

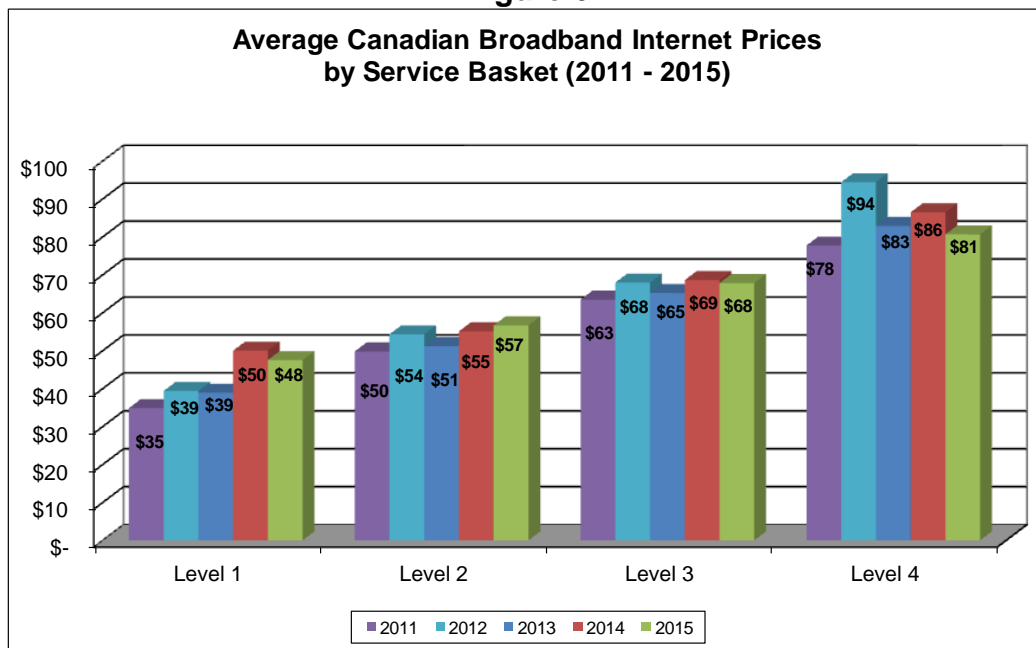
- ISPs that continue to offer 3 Mbps or slower Level 1 broadband services in Canada are few in number today. In terms of ISPs surveyed for this study, only those providing services in Halifax and Regina offered Level 1 services. Based on the limited number of available observations for these two cities, the weighted average Level 1 service basket price declined from \$50.00 in 2014 to \$47.51 in 2015, a drop of 5.0%. Average 2015 Level 1 prices varied from \$34.10 in Regina to \$55.13 in Halifax. Since

³⁶ In Australia, rather than excess data charges applying, service speed is throttled significantly (i.e., to 256 kbps).

2011, Level 1 basket prices have increased at an average annual rate of 8.1%. This significant increase over the last five years is influenced by the steadily declining availability of Level 1 low-speed broadband services as well as the redefinition of the Level 1 basket in 2012.

- The Level 2 basket price increased from \$55.10 in 2014 to \$56.66 in 2015, an increase of 2.8%. Average 2015 Level 2 prices varied considerably from a low of \$52.88 in Regina to roughly \$74.45 in Halifax. Over the last five years, Level 2 broadband prices have increased at an average annual rate of 3.3%.
- The Level 3 basket price, on the other hand, declined from \$68.60 in 2014 to \$67.81 in 2015, a decrease of 1.2%. Average 2015 Level 3 prices also varied considerably from a low of \$62.88 in Regina to \$92.95 in Halifax. Over the last five years, Level 3 broadband prices have increased at an average annual rate of 1.7%; whereas since 2012, when the Level 3 basket was re-defined, its price has remained virtually unchanged.
- Lastly, the Level 4 basket price declined considerably from \$86.46 in 2014 to \$80.63 in 2015, a decline of 6.7%. Average 2015 Level 4 prices varied from \$74.51 in Montreal to \$105.80 in Regina. Since 2011, Level 4 prices have increased at an average annual rate of 0.9%. However, since 2012 when the Level 4 basket was re-defined, its price has declined significantly, from roughly \$94 to \$83 or 15% in total.

Figure 6



NOTE: Broadband service basket definitions were revised in 2012 to reflect the general availability of faster broadband service speeds; consequently, price comparisons between 2012-2015 and 2011 should be made with caution.

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Price variations in the case of broadband services can be affected by differences in service speeds offered by ISPs. For instance, in the case of Level 3 basket, the surveyed plans included in this year's study range from advertised download speeds of 20 to 40 Mbps, with an average download speed of roughly 28 Mbps. In the case of the Level 4 basket, advertised speeds varied from 50 to 100 Mbps, with an average speed of roughly 68 Mbps. Since 2012, there has been almost no change in measured average Level 3 or 4 basket advertised download speeds.

Table 9 provides a summary of the percentage of surveyed Canadian broadband service plans with data caps along with the range (low to high-end) and average data caps that apply in the case of broadband service plans with explicit monthly data limits. With the exception of the Level 1 basket (which includes a limited number of observations), the majority of Canadian broadband service plans are subject to data usage caps (i.e., 59% to 79%). Where applied, the average data cap ranges from 50 GB in the case of the Level 1 basket to 300 GB in the case of the Level 4 basket. With the exception of the average Level 4 data cap, which is largely unchanged compared to last year, the average data caps have all increased by between 10% and 25% this year relative to last year.

Table 9
2015 Canadian Broadband Internet Service Plans with Data Caps

Basket	Percentage of Surveyed Plans with a Data Cap	Range of Data Caps (low to high in GB)	Average of Data Capped Plans
Level 1	20%	50	50 GB
Level 2	59%	60 – 300	135 GB
Level 3	79%	100 – 300	200 GB
Level 4	73%	150 – 500	302 GB

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Reseller ISP Prices

Broadband service prices offered by two reseller ISPs – i.e., Primus and Teksavvy – were collected as part of this year's study. These two ISPs rely on wholesale broadband access services (acquired from the incumbent telephone and cable companies) to provide retail broadband services.

Table 10 provides a summary of the national-level differentials between the incumbents' and reseller ISPs' prices for each of the four broadband service baskets. As shown in the table, reseller ISP broadband service prices are consistently lower than those of the incumbents across all four service baskets. The price discounts range from 21% in the case of the Level 1 basket to 30% in the case of the Level 3 basket. Typically reseller ISPs also offer either higher data caps than the incumbents or no data caps at all. It is also worth noting that the broadband services offered by the two surveyed ISPs vary significantly by city and, in fact, are not available in all of the cities included in the study.

Table 10
2015 Canadian Broadband Internet Service Rates
Incumbents versus Reseller ISPs

Baskets	Incumbents	Reseller ISPs	Percentage Differential
Level 1	\$46.58	\$36.95	-21%
Level 2	\$59.32	\$43.10	-27%
Level 3	\$68.34	\$47.63	-30%
Level 4	\$88.55	\$67.62	-24%

Unweighted averages.

Resellers include Primus and Teksavvy. Note that service features such as service speeds and, where applicable, data caps vary between incumbents and resellers.

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5.3 International Broadband Service Prices

As with the other service categories, there are a number of notable differences in the way in which broadband services are provisioned in some of the surveyed countries compared to Canada:

- In some of the surveyed European countries, to obtain a DSL broadband Internet service on a stand-alone basis, the customer must in some cases also lease a landline connection (which adds an additional access line charge).
- Fibre and/or DSL-based broadband services offered in the U.K., France, Germany and Italy generally include VoIP and/or IPTV services for a single bundled price. The option of a pure stand-alone broadband Internet service is not available in some cases.
- In Japan, broadband Internet service typically consists of two separate service elements: (i) a network access facility (fibre or ADSL), often obtained from NTT and (ii) an Internet access service provided by a third-party ISP. Therefore, there are two fees involved: the broadband access fee and ISP fee.

Table 11 below provides a summary of the unweighted average "advertised" download and upload service speeds of the surveyed broadband services included in each of the four specified broadband service baskets for Canada and the surveyed foreign jurisdictions.³⁷ The table also includes average monthly

³⁷ While advertised download speeds are readily available, the same is not true for upload speeds. Consequently, the average upload speeds are based on a somewhat lower number of observations compared to average download speeds.

data usage caps for those plans that include data caps which, for the surveyed countries and service providers, were only found in Canada and Australia.

Table 11
2015 International Broadband Internet Services
Average Advertised Speeds and Applicable Data Caps

Baskets	Canada	U.S.	U.K.	Australia	France	Japan *	Germany	Italy
Level 1 Basket (≤ 3 Mbps, 5GB/month)								
Download Speed (Mbps)	1.9	2.3	na	na	na	1.3	na	na
Upload Speed (Mbps)	0.7	0.9	na	na	na	0.5	na	na
Data Caps (GB)	50	na	na	na	na	na	na	na
Level 2 Basket (4 - 15 Mbps, 20 GB/month)								
Download Speed (Mbps)	11.1	9.8	na	10.0	8.0	12.0	10.0	7.0
Upload Speed (Mbps)	2.6	3.8	na	0.7	1.0	1.3	0.6	0.4
Data Caps (GB)	135	na	na	50	na	na	na	na
Level 3 Basket (16 - 40 Mbps, 50 GB/month)								
Download Speed (Mbps)	27.5	23.5	38.0	22.5	31.7	35.3	19.0	26.7
Upload Speed (Mbps)	5.6	6.7	9.5	10.0	8.0	1.3	1.5	2.3
Data Caps (GB)	200	na	na	200	na	na	na	na
Level 4 Basket (> 40 Mbps, 75 GB/month)								
Download Speed (Mbps)	67.7	76.9	84.0	100.0	100.0	352.6	100.0	100.0
Upload Speed (Mbps)	10.5	18.5	14.5	21.0	27.5	280.6	28.7	13.3
Data Caps (GB)	302	na	na	200	na	na	na	na

Average data caps calculated based on surveyed plans with applicable data caps.

na = no broadband service available from and/or no applicable data caps applied by the surveyed service providers .

* Japan's Level 4 affected by KDDI's 1 Gbps services plan included in the survey.

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As indicated in the table above, Level 1 broadband services are not offered by the surveyed ISPs in the U.K., France, Germany, Italy or Australia. As well, the same applies in the case of Level 2 broadband services in the U.K. It should also be noted that, where available, the number of the surveyed ISPs who provide broadband services that fall into the Level 1 and 2 basket speed ranges has declined; consequently, the average prices and advertised service speeds reported for these two baskets are often based on a limited number of observations or, in some cases, a single observation. On the other hand, most of the surveyed ISPs provided Level 3 and 4 basket compliant broadband services.

Average advertised download speeds for the Level 4 basket vary significantly due to the different underlying technologies offered by the surveyed ISPs (e.g., cable, ADSL, VDSL and fibre). The targeted Level 4 basket download speed range is between 41 and 100 Mbps. However, in Japan, even higher speed services were included in the study since services in the 41 and 100 Mbps range were not available (i.e., 200 Mbps service for NTT, 160 Mbps service for J:Com and 1,000 Mbps for KDDI), which explains the average download of well over

100 Mbps in this case.³⁸ The Level 4 advertised download speeds of the Canadian broadband services included in the study ranged from 45 to 100 Mbps. The Canadian average advertised download speed was roughly 68 Mbps, which fell below the average speeds for the other surveyed countries.

Level 4 average advertised upload speeds also vary significantly. The most significant differences are associated with fibre-based broadband services included in the Level 3 and 4 baskets where upload speeds range from 2 Mbps in the case of Telstra's 100 Mbps fibre service to 1000 Mbps in the case of KDDI's 1 Gbps residential broadband service. The Level 4 upload speeds of the Canadian broadband services included in the study ranged from 3 to 30 Mbps and the average was 10.5 Mbps, which once again falls below the averages for the other surveyed countries.

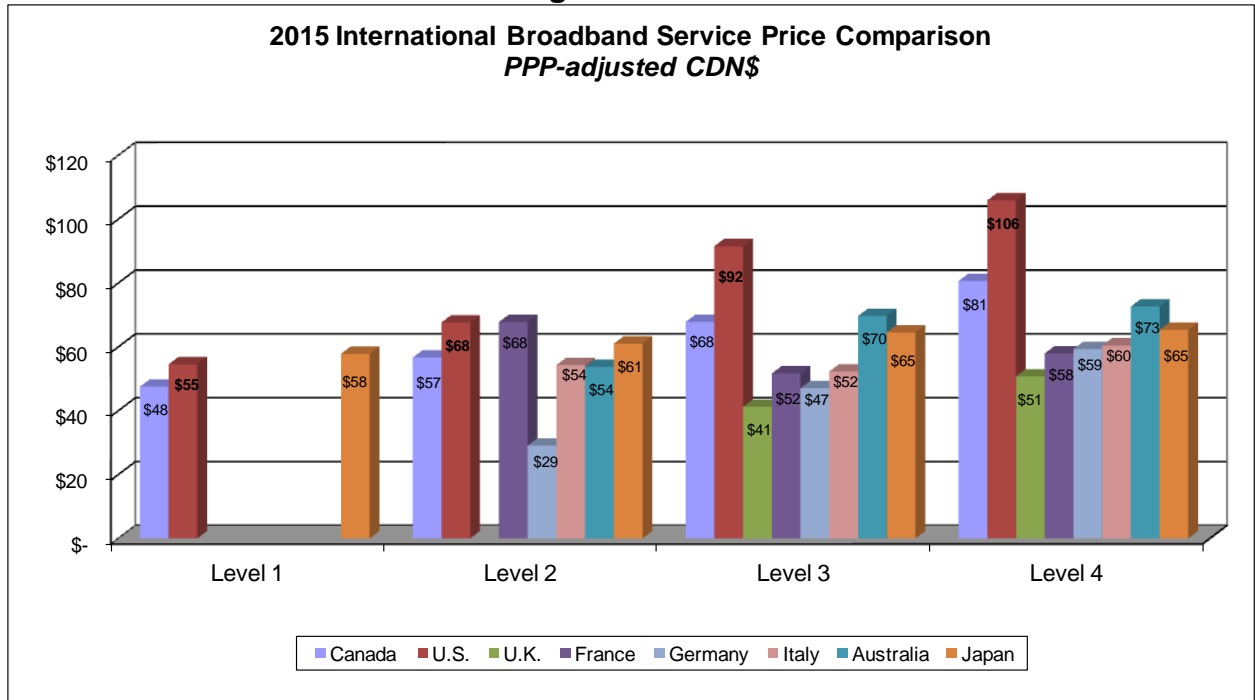
Figure 7 below provides a comparison of current weighted average broadband service prices for Canada and the seven surveyed foreign jurisdictions for each of the four broadband service level baskets. Table A3.3 and Figures A3.3 a, b, c and d in Attachment 3 provide more detailed historical broadband Internet service price results for the period 2008 to 2015, as applicable, for each of the four broadband service baskets.

- Level 1 broadband services were only available from surveyed ISPs in three of the eight countries included in the study – i.e., Canada, the U.S. and Japan. In this case, Canada's average monthly price of \$47.51 is considerably lower than the measured average prices for the U.S. and Japan of roughly \$55 and \$58, respectively.
- In the case of the Level 2 basket, Canada's average monthly price of \$56.66 falls just above the average for the group of surveyed foreign jurisdictions of roughly \$55.50. Overall Canada ranks fourth in the group, ahead of the U.S., France and Japan. There was no Level 2 service plan offered by any of the surveyed service providers in the U.K.
- For the Level 3 basket, Canada's average monthly price of \$67.81 falls considerably above the average price for the other surveyed countries of roughly \$60. In this case, Canada ranks sixth out of the eight countries in the study, ahead of the U.S. and Australia.
- For the Level 4 basket, Canada's average monthly price of \$80.63 again falls considerably above the average for the other surveyed countries of roughly \$67.50. In this case, Canada ranks seventh out of the eight countries in the study, ahead of only the U.S. Otherwise, the average price in Canada is considerably higher than many of the measured prices in the remaining countries. It is worth noting in this respect that all of the

³⁸ Note that the two other companies surveyed in Japan, KDDI and Yahoo! BB, offer 50 Mbps services, which were included in the Japanese Level 4 Basket category.

countries with lower Level 4 basket prices also have higher average advertised download and upload speeds compared to Canada (see Table 11 above).

Figure 7



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Canada's broadband service price ranking has remained relatively consistent since the study was first conducted in 2008, including in the case of the Level 4 basket which was added to the study in 2011. The measured prices for the European countries included in the study, including the U.K. and France and, since last year, Germany and Italy, have consistently been lower than those in Canada – in some cases, by a wide margin.

In sum, Canadian broadband Internet service prices compare favourably with the other surveyed countries in the case of the Level 1 (≤ 3.0 Mbps download speeds) and Level 2 (4 – 15 Mbps) broadband service baskets. However, Canadian Level 3 (16 – 40 Mbps) and Level 4 (> 40 Mbps) basket prices are higher than the prices measured in the surveyed countries included in the study, with the exception of Japan and the U.S. in the first case and solely the U.S. in the latter case.

5.4 International Rural & Remote Broadband Service Prices

This section provides a comparison of residential rural and remote area fixed wireless broadband services available in Canada and several international jurisdictions, namely the U.S., the U.K. and Australia.

The principal broadband service information collected for each surveyed fixed wireless ISP includes the following:

- *Technology*: fixed wireless technology generation (e.g., 4G or other);
- *Download and Upload Speeds*: range of service speeds in Mbps;
- *Data Caps*: range of monthly usage allowances (GB/month);
- *One-time Costs*: including any applicable up-front installation fees and/or equipment costs;
- *Service Prices*: monthly service fees, equipment rental fees and data usage overage fees, as applicable; and
- *Contract Term*: where applicable.

There are a large number of fixed wireless service providers serving different geographic areas scattered across rural and remote areas of Canada as well as the other three surveyed countries.³⁹ Some fixed wireless ISPs may serve no more than a single community. Consequently, selecting a representative sample of ISPs serving rural and remote areas for each country considered is not straightforward. This segment of the broadband market is typically not dominated by a few large scale ISPs as in the case of urban markets. Recognizing this fact, we have attempted as best as possible to include larger scale ISPs in Canada and the selected international jurisdictions that specialize in serving rural and remote areas.

The selected fixed wireless ISPs include:

- **Canada**: Xplornet, Storm, YourLink, and Ruralwave.
- **U.S.**: Skybeam, Digis, and Digitalpath.
- **Australia**: SkyMesh, Active8me, and Aussie Broadband.
- **U.K.**: Vispa, WiSpire, and eXwavia.

³⁹ For instance, there are close to 1,200 fixed wireless broadband service providers in the U.S., see <http://broadbandnow.com/Fixed-Wireless-Providers>.

As in the cases of the cable, DSL and fibre broadband services presented above, the data on fixed wireless broadband services are categorized according to the same Level 1 to 4 broadband service baskets. However, in this case, the monthly data usage levels are not applied, since fixed wireless broadband service plans often include relatively low monthly data allowances.

All of the surveyed fixed wireless services included in the study are based on 4G or higher technologies. In Canada's case, the surveyed fixed wireless services are provided in locations in southern Canada – i.e., New Brunswick, Ontario and Saskatchewan. Similarly, the surveyed fixed wireless services for the U.S., U.K. and Australia are provided in locations scattered across each of those countries.

Table 12 provides a summary of the average advertised download speeds and, where applicable, data caps for the surveyed rural & remote fixed wireless broadband services by service basket.

Table 12
2015 Rural & Remote Fixed Wireless Broadband Service
Average Advertised Download Speeds and Monthly Data Caps

Broadband Baskets	Canada		U.S.		U.K.		Australia	
	Download Speed (Mbps)	Data Cap (GB)	Download Speed (Mbps)	Data Cap (GB)	Download Speed (Mbps)	Data Cap (GB)	Download Speed (Mbps)	Data Cap (GB)
Level 1 (Up to 3 Mbps)	1.9	38	2.0	unlimited	-	-	-	-
Level 2 (4 to 15 Mbps)	7.4	90	8.0	175	8.0	28	12.0	235
Level 3 (16 to 40 Mbps)	25.0	75	20.0	250	20.0	70	25.0	352
Level 4 (Over 40 Mbps)	-	-	-	-	60.0	350	-	-

Note: "-" means no service provided by the surveyed ISPs.

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As can be seen from table above, Level 1 service plans are only provided by the surveyed fixed wireless ISPs in Canada and the U.S. In these two cases, average advertised download speeds are similar at close to 2 Mbps. In the case of the Level 2 service basket, the average download service speed in Canada of 7.4 Mbps is very similar to, but just below, that of the U.S. and U.K. The average Level 2 advertised download speed for Australia is higher at 12.0 Mbps. For the Level 3, average advertised download speed in both Canada and Australia are 25 Mbps and somewhat slower at 20 Mbps in the other two countries. The U.K. was the only country with a surveyed ISP offering a Level 4 fixed wireless service which, in this case, provides a service with an advertised download speed of 60 Mbps.

Most of the surveyed fixed wireless service plans are subject to data caps of varying levels; however, some offered primarily by surveyed ISPs in Canada and the U.S. had no data restrictions. In Australia, all surveyed service plans were

subject to data caps. For plans subject to data caps, overage fees typically applied to excess data usage in a given month or, in the case of the surveyed plans in Australia, service speeds were throttled when data caps are reached.

As shown in Table 12, in the case of the Level 1 service baskets, the surveyed Canadian plans were capped at 38 GB per month, whereas the comparable U.S. plans included no restrictions on data use. For Level 2, average applicable data caps vary considerably. The average Canadian data cap of 90 GB per month is considerably higher than the average U.K. data cap of 28 GB per month, but much lower than the average data caps in the U.S. and Australia of 175 GB and 235 GB, respectively. For Level 3, the average Canadian data cap of 75 GB per month is similar to that of the U.K., but again well below those for the U.S. and Australia. Lastly, for Level 4, only a single plan was found in the U.K. among the surveyed ISPs, where the data cap is 350 GB per month.

Table 13 below provides a summary of average fixed wireless broadband Internet service prices expressed in PPP-adjusted Canadian dollars and excluding taxes. The average prices reported in the table include applicable rental fees or, in the alternative, amortized equipment costs (where any such costs are spread over a 24 month period which corresponds to the typical contract term for the services).

- In the case of the Level 1 fixed wireless broadband service basket, the average Canadian price of \$64.25 is considerably higher than the U.S. rate of \$57.43. No Level 1 fixed broadband services were available from the surveyed ISPs in the other two countries.
- For the Level 2 basket, the average Canadian price of close to \$70 is well below the average U.S. price of roughly \$90, but otherwise well above the measured average price for Australia and double the measured average price for the U.K.
- For the Level 3 basket, the average Canadian price of roughly \$60 is again well below the average U.S. price of roughly \$110, but also higher than the measured prices for the U.K. and Australia. The differences in the latter two cases are not as pronounced in this case compared to the Level 2 basket.
- Lastly, among the surveyed ISPs, a Level 4 compliant fixed wireless broadband service was only found in the U.K. where the price of the 60 Mbps service is roughly \$63 per month.

Table 13
2015 Rural & Remote Fixed Wireless Broadband Service Prices
*(including amortized equipment cost where applicable) **

PPP-Adjusted CDN\$

Broadband Baskets (Download Speeds in Mbps)	Canada	U.S.	U.K.	Australia
Level 1 (Up to 3 Mbps)	\$64.25	\$57.43	-	-
Level 2 (4 to 15 Mbps)	\$69.90	\$90.11	\$29.77	\$50.76
Level 3 (16 to 40 Mbps)	\$59.99	\$109.77	\$47.20	\$55.11
Level 4 (Over 40 Mbps)	-	-	\$62.71	-

* Any applicable equipment costs were amortized over a 24-month time frame.

" - " means no service provided by the surveyed ISPs.

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Canada's relative rural and remote fixed wireless broadband service pricing ranking is essentially the same as last year.⁴⁰ The biggest difference this year compared to last is the availability of a Canadian Level 3 compliant fixed wireless broadband service this year, whereas last year none of the surveyed Canadian ISPs offered a fixed wireless service with an advertised download speed above 16 Mbps (i.e., a Level 3 or 4 compliant service).

On balance, Canadian Level 1, 2 and 3 fixed wireless broadband Internet service prices compare favourably with those available in the U.S., but they are considerably higher than those in Australia and the U.K. At this time, among the surveyed Canadian ISPs, none provided a Level 4, 40 Mbps plus, fixed wireless broadband service, whereas such services were found in the U.K.

⁴⁰ Note that the average prices for the U.S., U.K. and Australia shown in Table 12 are not comparable to the average prices shown for these same countries in Table 14 (page 42) of last year's price comparison study. The average prices for the U.S., U.K. and Australia included in last year's study were incorrectly reported in own-currencies rather than PPP-adjusted Canadian dollars.

6.0 MOBILE INTERNET SERVICE

6.1 Mobile Internet Service Baskets

There are two mobile Internet service levels included in the study. They consist of the following usage-based service elements and characteristics:

- Technology 3rd or 4th generation (e.g., 3G, 3G+, 4G or 4G LTE)
- Service speed: Advertised download speed of 1.5 Mbps or faster⁴¹
- Equipment: USB modem key (included with service on a no-charge, rental or purchase basis)
- Data usage: **Level 1:** 2 GB per month
Level 2: 5 GB per month

Once again, one-time charges (such as activation fees) are excluded.

6.2 Canadian Mobile Internet Service Prices

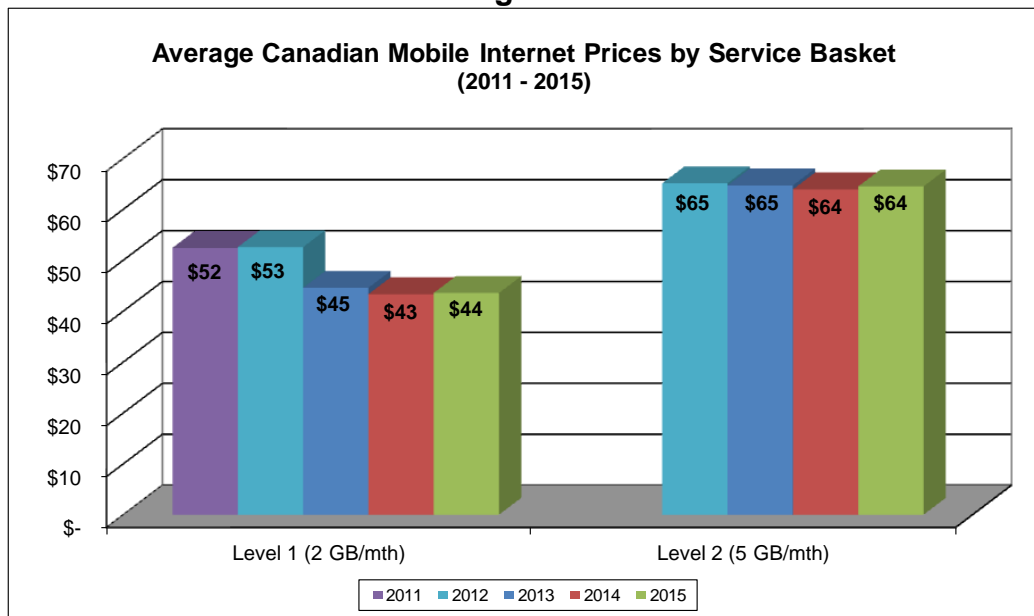
Figure 8 below provides a summary of Canadian Level 1 and 2 mobile Internet service basket prices for the periods 2011 to 2015 and 2012 to 2015, respectively. More detailed price information by city is provided in Table A2.5 of Attachment 2.

- The Level 1 mobile Internet service price increased slightly from \$43.30 in 2014 to \$43.55 in 2015, an increase of 0.6%. Level 1 prices varied across the surveyed cities from roughly \$43 in several cases to over \$50 in Regina. Most Level 1 service plans included 2 or 3 GB of data allowance per month, although several included greater data allowances of 4 GB to 6 GB (i.e., SaskTel and Mobilicity, respectively). The average data allowance for all surveyed Level 1 plans was 2.8 GB per month. Since 2011, Level 1 prices have declined at a rate of 4.5% per year.
- The Level 2 price also increased slightly from \$63.90 in 2014 to \$64.48 in 2015, an increase of 0.9% in this case. Level 2 prices varied by city from

⁴¹ Advertised versus actual average speeds can vary significantly in the case of mobile wireless services. Actual average speeds are sensitive to local network usage levels and users locations, among other factors. Some wireless service providers include theoretical maximum speeds in their advertising, while others use or least also note expected average speeds in their advertising. Consequently, comparing service speeds across service providers and countries is not straightforward even when the same mobile wireless technology is in use.

\$60.57 in Montreal to \$71.88 in Regina. The Level 2 plans mostly included data allowances of 5 or 6 GB per month, with some as high as 8 or 10 GB (i.e., SaskTel and WIND, respectively). The average Level 2 data allowance for all surveyed Level 2 plans was 6.3 GB per month. Since 2012, the first year this basket was included in the study, Level 2 prices have declined at a rate of 0.3% per year.

Figure 8



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The average advertised download speed of the mobile Internet services included in this year's study is roughly 73 Mbps.⁴² The relatively high average advertised speed reflects the fact that the incumbent wireless carriers have all launched 4G LTE mobile Internet access services. Rogers, Bell and TELUS advertise 4G LTE download speeds of up to 75 Mbps, and also add that higher speeds of up to 150 Mbps are available in some areas. However, for one, Bell also notes that "expected average" download speeds may be considerably lower – i.e., 12-25 Mbps or, in higher speed 4G LTE areas, 18-40 Mbps.⁴³ SaskTel advertises that its 4G LTE networks allow download speeds of up to 100 Mbps; although it notes that actual speeds may be 7-15 Mbps.⁴⁴ MTS advertises that its 4G LTE networks allow download speeds of up to 150 Mbps. Both Eastlink and Videotron have also launched 4G LTE networks and advertise similar upper-end speeds. In contrast, other new entrants such as WIND and Mobilicity advertise 3G+ speeds of up to 21 Mbps.

⁴² The comparable average advertised mobile Internet download speed noted in the 2014 price comparison study was 67 Mbps, while that of the 2011 price comparison study was 18 Mbps.

⁴³ See for instance: <http://network.bell.ca/en/lte/>.

⁴⁴ See: <http://www.sasktel.com/wps/wcm/connect/content/home/wireless/coverage-and-travel/4g-lte/4g-lte>

A comparison of the mobile Internet service rates offered by the incumbents (Rogers, Bell and TELUS) and new entrants (Mobicility, WIND, Videotron and Eastlink), as applicable, in the cities of Vancouver, Toronto, Montreal and Halifax is provided in Table 14. For the Level 1 mobile Internet service basket, the new entrants' prices are roughly 22% lower than the incumbents on average. For the Level 2 service basket, the differential is considerably larger at roughly 32%. As in the case of mobile wireless services, the differentials are largest in Halifax, Toronto and Vancouver where Eastlink in the first case and Mobicility and WIND in the latter two cases are offering Level 2 price discounts of roughly 40% or more relative to the incumbents. Incumbent and new entrant (i.e., Videotron) prices in Montreal are very similar.

Table 14
2015 Canadian Mobile Internet Service Rates
Incumbents versus New Entrants

Baskets	Vancouver	Toronto	Montreal	Halifax	Average
Level 1 Basket (2 GB/month)					
Incumbents	\$43.75	\$43.75	\$43.75	\$43.75	\$43.75
New Entrants	\$32.46	\$32.46	\$42.29	\$30.00	\$34.30
<i>Percentage Differential</i>	-26%	-26%	-3%	-31%	-22%
Level 2 Basket (5 GB/month)					
Incumbents	\$67.08	\$67.08	\$60.42	\$67.08	\$65.42
New Entrants	\$37.46	\$37.46	\$62.29	\$40.00	\$44.30
<i>Percentage Differential</i>	-44%	-44%	3%	-40%	-32%

Unweighted averages used in all cases.

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Compared to last year, the new entrants' mobile Internet price discounts relative to the incumbents have declined slightly in the case of the Level 1 (i.e., from 24% last year to 22% this year) and Level 2 service basket (i.e., from 38% last year to 32% this year). The reduction in the overall price differential this year is due primarily to the increase in Videotron's Level 1 and 2 prices relative to last year.

Note that the surveyed reseller/MVNOs Primus and PC Mobile do not currently offer mobile Internet service plans; consequently, a comparison between these service providers and the incumbents or new entrants is not possible.

6.3 International Mobile Internet Service Prices

Table 15 provides a summary of the average Level 1 and 2 advertised download speeds and data caps for Canada and each of the seven surveyed foreign jurisdictions. Upload speeds are often not advertised by wireless service providers and, therefore, are not included in the table.

Table 15
2015 International Mobile Internet Services
Average Advertised Speeds and Data Caps

Baskets	Canada	U.S.	U.K.	France	Australia	Japan	Germany	Italy
Level 1 Basket (2 GB/month)								
Download Speed (Mbps)	73.4	12.8	20.2	71.0	40.0	190.0	80.7	71.0
Data Cap (GB)	2.8	4.0	3.0	5.0	4.0	5.8	2.3	3.3
Level 2 Basket (5 GB/month)								
Download Speed (Mbps)	73.4	12.8	20.2	71.0	40.0	190.0	71.3	71.0
Data Cap (GB)	6.3	5.7	8.3	5.0	7.5	6.5	5.3	6.8

Simple averages calculated based on surveyed plans in each country.

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As shown in the table above, advertised download speeds for mobile Internet service plans vary significantly. The average advertised download speed of the surveyed Canadian mobile Internet services is roughly 73 Mbps. Higher advertised download speeds were found in Germany and Japan (i.e., 81 and 190 Mbps, respectively) and very similar advertised download speeds were found in France and Italy. Otherwise, considerably lower average advertised download speeds were found in the other surveyed foreign jurisdictions. Of the group, the U.S. has the lowest average advertised download speed at 12.8 Mbps.

Service speeds are dictated largely by technology. Many of the surveyed services use similar technologies. In Canada, the U.S., France, Germany, Italy and Japan, most of the surveyed service providers offer 4G LTE mobile Internet service plans. Despite using the same technology, however, advertised download speeds vary considerably. At one end of the spectrum, Verizon and AT&T provide mobile Internet services in the U.S. using 4G LTE technology, yet the information on their websites (which is very limited)⁴⁵ suggests that their 4G LTE actual average download speeds are currently in the range of 14.4 Mbps. In contrast, as noted earlier, Rogers, Bell and TELUS advertise 4G LTE download speeds of 75 to 150 Mbps. Similarly, Orange in France also advertises 4G LTE download speeds of 100 Mbps. At the other end of the spectrum, NTT Docomo in Japan advertises 4G LTE download speeds of up to 225 Mbps. Consequently, differences in advertised speeds for the same technology are significant.

The surveyed service providers in the remaining countries, the U.K. and Australia, generally offer 4G or 4G+ service plans at this time. In these cases, download speeds of between roughly 20 and 40 Mbps are advertised.

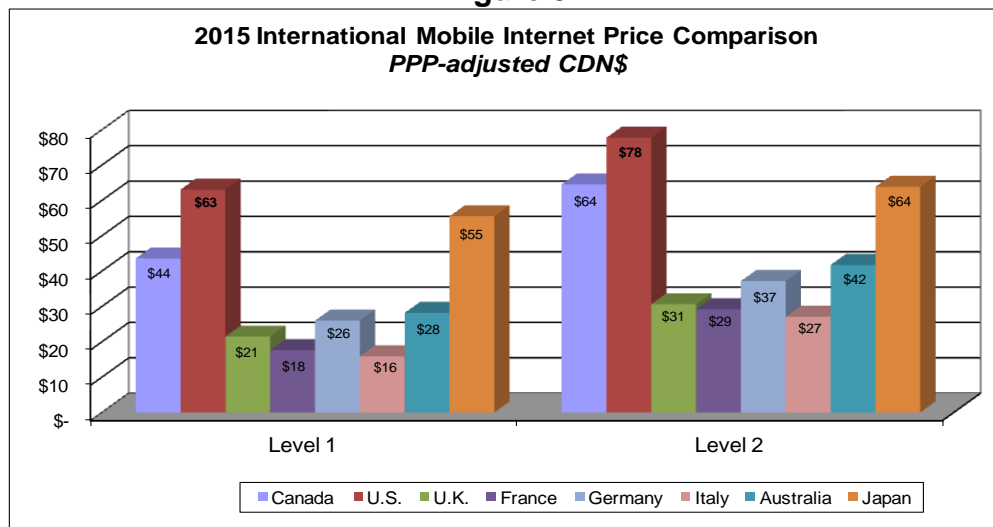
Figure 9 below provides a comparison of Level 1 and 2 mobile Internet service basket prices for Canada and the surveyed foreign jurisdictions. Table A3.4 and Figures A3.4 a and b in Attachment 3 provide detailed historical mobile Internet

⁴⁵ As well, CSRs are unable to provide service speed information.

price results for the period 2010 to 2015 for the Level 1 mobile Internet service basket and 2012 to 2015 for the Level 2 basket.

- In the case of the Level 1 mobile Internet service basket, the average Canadian price of \$43.55 is well above the average price for the other surveyed countries of roughly \$32.50. Overall, Canada ranks sixth among the eight countries in the study for this basket. Only the average Level 1 basket prices for U.S. and Japan are higher than Canada. Prices in all four surveyed European countries as well as Australia are considerably lower than Canada. It should also be noted that the average data cap of 2.8 GB per month for the Level 1 service plans included for Canada is one of the lowest in the group of surveyed countries, only Germany was lower at 2.3 GB (see Table 15 above).
- For the Level 2 service basket, the average Canadian mobile Internet price of \$64.48 is once again considerably higher than the average for the other countries of roughly \$44. In this case, Canada ranks seventh overall, with only the U.S. price placing higher. The average Level 2 price in Japan, however, is very close to Canada, whereas prices in the remaining countries are all considerably lower. In this case, the average data cap for the Canadian Level 2 service basket plans of 6.3 GB per month is generally comparable to the other countries included in the study.

Figure 9



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Relative to previous years' studies, Canada's Level 1 and Level 2 mobile Internet service basket rankings have largely remained stable. Canada has ranked on the high-side of the group, generally close to or below the U.S. and Japan. On the other hand, Australia and the European countries included in the study have

consistently had lower prices for both baskets compared to Canada – by a substantial margin in many cases.

In sum, Canada's average Level 1 (2 GB/month) and Level 2 (5 GB/month) mobile Internet service prices fall on the high-side of the group of surveyed countries.

7.0 BUNDLED SERVICES

7.1 Bundled Service Baskets

The following three bundled service baskets are included in the study:

- **Bundle 1:** wireline, broadband Internet and mobile wireless
- **Bundle 2:** wireline, broadband Internet and digital TV
- **Bundle 3:** wireline, broadband Internet, mobile wireless and digital TV

For the wireline, Internet and mobile wireless service elements in each bundle, Level 2 stand-alone service options are used. For the digital TV service element, a "basic" digital TV service option is included in the bundle. In a limited number of cases where Level 2 service options were not available or eligible for bundling discounts, higher level service options (e.g., Level 3 or 4) have been included.

7.2 Canadian Bundled Service Prices

All of the Canadian incumbent telephone companies included in this study offer variations of all three defined service bundles. In the case of the surveyed cable companies, Rogers, Videotron and EastLink can provide all three service bundles.⁴⁶ Access Communications and Shaw, on the other hand, do not provide wireless services either directly or indirectly through a third party. Consequently, they are only able to provide Bundle 2 compliant offerings. In Primus' case, it is only able to provide Bundle 1 since it does not offer TV services. Teksavvy is unable to provide any of the bundles since it does not provide either mobile or TV services.

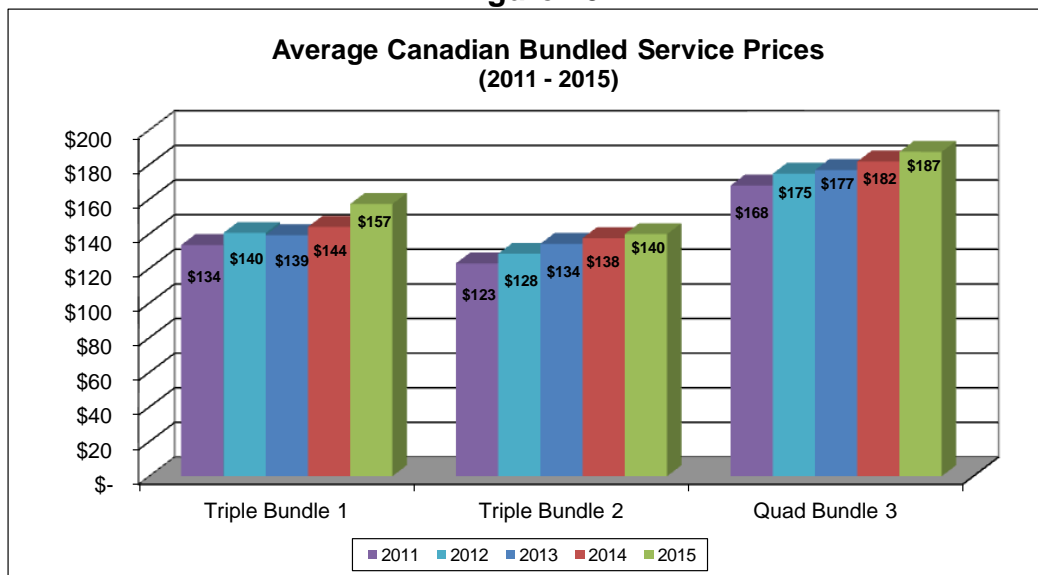
Basic digital TV service is included in Bundles 2 and 3. Services considered can be delivered over a range of technologies including cable, fibre-to-the-home or – node (including IPTV) and satellite. Basic digital TV packages can vary considerably across service providers in terms of TV channel inclusions, features and, ultimately, prices. Based on the surveyed plans, Canadian stand-alone basic digital TV plan prices range from roughly \$31 to \$62, (excluding additional charges or equipment fees). The average price is roughly \$42. Consequently, differences in basic digital TV service prices can introduce a fair degree of variation in Bundle 2 and 3 prices.

⁴⁶ EastLink launched its own mobile wireless service in early 2013, which is included in its service bundles for the purpose of this study.

Figure 10 provides a summary of Canadian average monthly prices for each of the three defined service bundles for the period 2011 to 2015. More detailed historical bundle pricing information by city is provided in Table A2.6 in Attachment 2.

- The Bundle 1 price increased significantly from \$143.95 in 2014 to \$157.20 in 2015, or by 9.2%. Bundle 1 prices varied across the six surveyed cities from roughly \$134 in Winnipeg to \$170 in Toronto. Since 2011, Bundle 1 prices have increased at a rate of 4.2% per year.
- The Bundle 2 price increased from \$137.51 in 2014 to \$139.78 in 2015, or by 1.6%. Bundle 2 prices varied by city from roughly \$124 in Winnipeg to \$171 in Halifax. Since 2011, Bundle 2 prices have increased at a rate of 3.3% per year.
- Lastly, the Bundle 3 price increased from \$181.70 in 2014 to \$187.33 in 2015, or by 3.1%. Bundle 3 prices varied by city from roughly \$154 in Winnipeg to \$218 in Halifax. Over the last five years, Bundle 3 prices have increased at a rate of 2.8% per year.

Figure 10



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Effective bundling discounts available to Canadian consumers vary considerably by individual bundling plan. For the three bundles included in the study, the average bundling discount amounted to 6% for Bundle 1, 11% for Bundle 2 and 8% for Bundle 3. The discounts amounted to monthly bundling savings of \$10 to \$17 compared to stand-alone prices. These average discounts are slightly lower than those found in last year's study.

7.3 International Bundled Service Prices

Surveyed foreign service providers capable of providing all three bundles include the incumbent telecom carriers in the U.S., France, Germany, Italy, Australia and Japan. In the U.K., BT had for some time provided wireless service (on a resale basis), but discontinued doing so in 2009. However, in late 2014, BT acquired EE, the largest mobile service provider in the U.K. Consequently, EE's Level 2 mobile wireless service (on stand-alone rate basis) has been included in BT's Bundles 1 and 3 in this year's study.

Some cable companies are also capable of providing all three bundles such as Virgin in the U.K. and Numericable in France. Kabel Deutschland (KD) in Germany was recently acquired by Vodafone; consequently, Bundles 1 and 3 in KD's case include Vodafone mobile wireless in this year's study. KD had previously offered mobile services on a resale basis. In Japan, J:COM had for some time provided wireless service (on a resale basis via its Willcom affiliate); however, Willcom was acquired by Softbank. J:COM currently has a joint marketing arrangement in place with au KDDI; therefore, Bundles 1 and 3 in J:COM's case include au KDDI mobile service in this year's study. Otherwise, the U.S. cable companies included in the study, Comcast and Time Warner, do not provide wireless services and, therefore, do not offer packages that meet the Bundle 1 and 3 requirements.

As already noted, basic digital TV service packages can vary significantly by service provider in terms of the number of TV channels and prices, which complicates the comparison of bundles that include this service. Basic TV packages in the U.S., for instance, tend to include a large number of TV channels (well over 100 on average), but at prices that are relatively expensive (i.e., close to USD\$50 on average) compared to the surveyed service providers in the other countries included in the study. In contrast, in the U.K., France, Germany and Italy, basic digital TV services are included with broadband services at a relatively low price. The basic digital TV service packages in these cases are by far the least expensive of the surveyed jurisdictions included in the study. The surveyed basic digital TV service packages in Canada's case fall in the middle ground between these two extremes in terms of average prices and number of basic-tier channels.

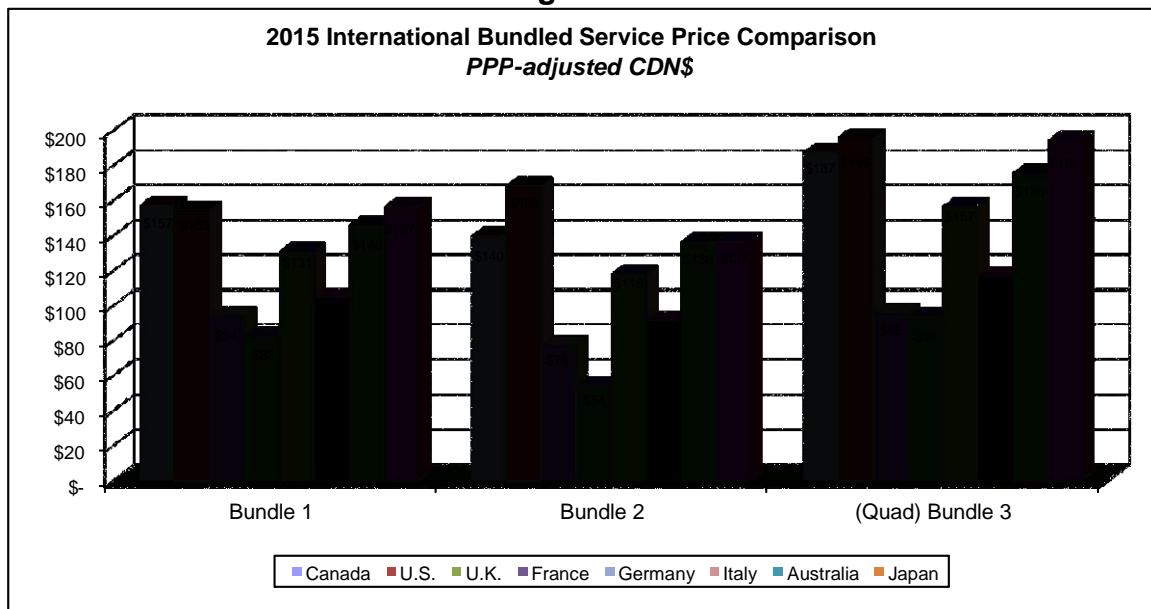
Figure 11 below provides a comparison of current average monthly prices for each of the three service bundles. More detailed historical bundled price information for the period 2008 to 2015 is provided in Table A3.5 and Figures A3.5 a, b and c in Attachment 3.

- In the case of Bundle 1, which includes wireline telephony, broadband and mobile wireless, the average Canadian bundle price of roughly \$157 is well above the average bundle price for the other surveyed countries of roughly \$124. Canada's average Bundle 1 price is the highest of the

group of countries, although it is very close to the measured bundle prices for the U.S. and Japan. On the other hand, it is well above the rates available in the U.K., France, Germany and Italy.

- In the case of Bundle 2, which includes wireline telephony, broadband and basic digital TV, the average Canadian bundle price of roughly \$140 is also well above the average bundle price for the other surveyed countries of roughly \$112. Canada's average Bundle 2 ranks seventh among the group of surveyed countries. Only the U.S. average Bundle 2 price is higher, although prices in Australia and Japan are only marginally lower than in Canada. Otherwise, once again, measured prices for the U.K., France, Germany and Italy are all considerably lower than in Canada.
- For Bundle 3, which includes all four services, the average Canadian bundle price of roughly \$187 is considerably above the average bundle price for the other surveyed countries of roughly \$147. In this case, Canada's average Bundle 3 price ranks sixth among the group of surveyed countries. Measured Bundle 3 prices are higher in the U.S. and Japan, but otherwise considerably lower in U.K., France and Italy.

Figure 11



Since 2008, Canada's relative ranking for all three bundles has tended to slip somewhat. Over this period, bundle prices in Canada have generally tended to be on the higher side of the group, but close to measured bundle prices for U.S., Australia and Japan. Bundle prices in the U.K. and France and, with more recent additions to the study, Germany and Italy, have tended to be at the lower-end of the group of surveyed countries.

In sum, average Canadian bundled service rates fall on the high side of the group of countries surveyed for this study. While differences across countries in the underlying services included in the bundles (especially broadband and digital TV services) can make bundled service comparisons somewhat tenuous, it is noteworthy that Canadian bundled service rates continue to compare very favourably to those in the U.S., where service pricing and provisioning practices are similar to those in Canada.

ATTACHMENT 1 – SERVICE BASKETS

**TABLE A1.1
WIRELINE SERVICE BASKETS**

Local Minutes of Use	Level 1	Level 2	Level 3
Outgoing (55%)	220	550	880
Incoming (45%)	180	450	720
Total Minutes	400	1,000	1,600
Outgoing by Time of Day/Week			
Peak (40%)	88	220	352
Off-Peak (60%)	132	330	528
Outgoing LD	10% of total	20% of total	30% of total
National Minutes	16	70	150
U.S. Minutes	6	30	80
Other Int'l Minutes		10	34
Total	22	110	264
Outgoing to Mobile	15% of total	15% of total	15% of total
Local	33	60	100
National		22.5	32
International			
Total	33	82.5	132
Average Call Length	3	3	3
Optional Features			
Voice Mail		Yes	Yes
Caller ID		Yes	Yes
Other			Yes (bundled, if available)

**TABLE A1.2
MOBILE WIRELESS SERVICE BASKETS**

Minutes of Use/Month	Level 1	Level 2	Level 3	Level 4	Level 5
Outgoing (60%)	90	270	720	Unlimited Nationwide (to fixed and mobile)	Unlimited Nationwide (to fixed and mobile)
Incoming (40%)	60	180	480		
Total	150	450	1,200		
Time of Day/Week					
Peak (40%)	60	180	480	NA	NA
Off-Peak (60%)	90	270	720		
Outgoing LD	10% of total	10% of total	15% of total		
National	9	21	90	NA	NA
US		6	18	(zero	(zero
Other				International	International
Total	9	27	108	calling)	calling)
Outgoing to Mobile	50% of total	50% of total	50% of total		
On-net (2/3)	30	90	240	NA	NA
Off-net (1/3)	15	45	120		
Total	45	135	360		
Average Call Length	3 min.	3 min.	3 min.	NA	NA
Features					
Voice Mail		Yes	Yes	Yes	Yes
Caller ID		Yes	Yes	Yes	Yes
Other			Yes		
SMS		300	300	Unlimited	Unlimited
Data			1 GB	2 GB	5 GB

**TABLE A1.3
BROADBAND INTERNET SERVICE BASKETS**

Elements	Level 1	Level 2	Level 3	Level 4
Transmission Speed	Basic Services ≤ 3.0 Mbps	4 – 15 Mbps (highest available)	16 – 40 Mbps (highest available)	> 40 Mbps (highest available in target range of 41 to 100 Mbps)
Monthly Usage	10 GB	50 GB	100 GB	150 GB
Modem	No cost with contract or rental / 24 month amortization			

**TABLE A1.4
MOBILE INTERNET SERVICE BASKETS**

Elements	Level 1	Level 2
Monthly Usage	2 GB	5 GB
Transmission Speed	≥ 1.5 Mbps download (3G technology or higher)	
USB Modem	No cost with contract or rental / 24 month amortization	

**TABLE A1.5
BUNDLED SERVICE BASKETS**

Elements	Bundle 1 Triple-play	Bundle 2 Triple-play	Bundle 3 Quad-Play
Wireline	Wireline Level 2	Wireline Level 2	Wireline Level 2
Wireless	Wireless Level 2		Wireless Level 2
Broadband Internet	Broadband Level 2	Broadband Level 2	Broadband Level 2
Television		Basic Digital TV Package	Basic Digital TV Package

Note that where Level 2 service options are not eligible for bundling discounts, higher level services (i.e., Level 3 or 4) may be included in a bundle as long as the resulting bundled price is lower than the sum of the corresponding stand-alone Level 2 service component prices.

ATTACHMENT 2 – CANADIAN PRICE COMPARISONS

Table A2.1 - Canadian Wireline Prices

Baskets	Halifax	Montreal	Toronto	Winnipeg	Regina	Vancouver	Average
Level 1 Basket (low-volume use, 400 min/month)							
2008	\$31.73	\$30.27	\$31.61	\$30.49	\$28.16	\$30.90	\$30.88
2009	\$32.23	\$28.92	\$32.51	\$30.48	\$28.16	\$25.92	\$29.80
2010	\$30.08	\$29.39	\$33.88		\$26.49	\$28.27	\$31.16
2011	\$31.79	\$27.33	\$34.63		\$26.52	\$34.52	\$32.06
2012	\$31.89	\$31.31	\$35.30		\$26.76	\$33.16	\$33.42
2013	\$32.04	\$32.85	\$38.45		\$26.86	\$33.12	\$35.33
2014	\$33.06	\$37.10	\$44.24		\$27.17	\$31.45	\$38.99
2015	\$35.07	\$38.47	\$47.30	\$36.73	\$27.34	\$31.39	\$40.64
CAGR	1.4%	3.5%	5.9%	2.7%	-0.4%	0.2%	4.0%
Level 2 Basket (average use, 1,000 min/month)							
2008	\$48.93	\$45.44	\$48.96	\$50.61	\$41.39	\$48.67	\$47.91
2009	\$53.61	\$52.01	\$57.78	\$51.35	\$41.39	\$34.68	\$50.05
2010	\$50.78	\$46.81	\$58.09		\$41.50	\$44.18	\$51.42
2011	\$47.34	\$46.72	\$54.66		\$41.52	\$44.62	\$49.81
2012	\$49.05	\$48.55	\$57.08		\$41.71	\$45.19	\$51.71
2013	\$51.56	\$54.58	\$62.50		\$39.94	\$43.63	\$55.77
2014	\$55.19	\$52.26	\$61.77		\$39.97	\$41.11	\$54.37
2015	\$59.57	\$59.83	\$64.88	\$58.23	\$40.81	\$47.69	\$59.44
CAGR	2.8%	4.0%	4.1%	2.0%	-0.2%	-0.3%	3.1%
Level 3 Basket (high-volume use, 1,600 min/month)							
2008	\$60.63	\$59.36	\$63.02	\$60.47	\$49.81	\$57.45	\$60.27
2009	\$66.34	\$61.68	\$67.59	\$59.47	\$49.56	\$51.51	\$61.55
2010	\$67.02	\$61.15	\$64.19		\$48.96	\$51.79	\$60.78
2011	\$58.35	\$60.97	\$61.36		\$48.99	\$57.59	\$60.22
2012	\$60.33	\$59.08	\$65.97		\$49.66	\$50.62	\$60.52
2013	\$64.58	\$60.94	\$65.84		\$49.11	\$52.69	\$61.53
2014	\$67.85	\$58.95	\$65.80		\$49.03	\$48.91	\$60.29
2015	\$69.70	\$66.89	\$68.89	\$65.87	\$48.98	\$52.66	\$64.96
CAGR	2.0%	1.7%	1.3%	1.2%	-0.2%	-1.2%	1.1%

Note: Some generally minor changes in methodology apply year-to-year. Averages calculated on a market share & population weighted basis.

2008 and 2009 results for Winnipeg drawn from Wall Communications' 2009 Price Comparison Study.

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Table A2.2 - Canadian Mobile Wireless Prices
Based on Incumbent Primary Brand, New Entrant and Reseller Prices

Baskets	Halifax	Montreal	Toronto	Winnipeg	Regina	Vancouver	Average
Level 1 Basket (low-volume use, 150 min/month)							
2008	\$33.25	\$31.96	\$33.55	\$31.44	\$30.16	\$32.90	\$32.73
2009	\$32.48	\$33.24	\$33.34	\$31.85	\$29.44	\$33.32	\$33.03
2010	\$29.23	\$34.38	\$34.33		\$28.64	\$34.10	\$34.03
2011	\$29.24	\$34.47	\$34.45		\$29.59	\$31.94	\$33.73
2012	\$29.75	\$34.72	\$34.44		\$29.66	\$34.58	\$34.32
2013	\$30.76	\$30.63	\$31.09		\$28.88	\$30.06	\$30.71
2014	\$36.50	\$36.28	\$35.04		\$35.05	\$36.29	\$35.70
2015	\$37.37	\$37.46	\$37.54	\$32.98	\$32.43	\$38.21	\$37.29
CAGR	1.7%	2.3%	1.6%	0.7%	1.0%	2.2%	1.9%
Level 2 Basket (average use, 450 min and 300 text per month)							
2008	\$53.14	\$62.62	\$63.37	\$51.91	\$61.20	\$58.34	\$60.81
2009	\$48.73	\$59.17	\$59.20	\$50.49	\$44.44	\$59.30	\$57.78
2010	\$48.05	\$54.34	\$53.56		\$44.77	\$53.74	\$53.49
2011	\$47.39	\$51.50	\$49.99		\$48.19	\$50.86	\$50.51
2012	\$47.22	\$51.04	\$51.97		\$42.54	\$51.61	\$51.31
2013	\$43.44	\$44.78	\$45.40		\$44.86	\$43.93	\$44.86
2014	\$45.40	\$45.59	\$44.29		\$54.29	\$46.20	\$45.26
2015	\$48.45	\$49.04	\$48.15	\$46.65	\$56.70	\$49.28	\$48.68
CAGR	-1.3%	-3.4%	-3.8%	-1.5%	-1.1%	-2.4%	-3.1%
Level 3 Basket (high-volume use, 1,200 min, 300 text and 1GB data per month)							
2008	\$121.04	\$113.21	\$111.51	\$111.51	\$113.67	\$109.68	\$112.34
2009	\$105.61	\$104.38	\$102.20	\$112.82	\$94.64	\$101.24	\$103.24
2010	\$101.44	\$108.37	\$112.63		\$94.97	\$107.27	\$109.59
2011	\$96.73	\$98.73	\$100.76		\$96.69	\$99.61	\$99.69
2012	\$96.44	\$98.92	\$98.26		\$96.42	\$98.22	\$98.37
2013	\$94.40	\$93.78	\$93.89		\$77.07	\$93.96	\$93.59
2014	\$86.91	\$73.59	\$81.00		\$65.33	\$86.46	\$79.69
2015	\$86.76	\$82.96	\$87.36	\$73.54	\$72.56	\$88.32	\$85.22
CAGR	-4.6%	-4.3%	-3.4%	-5.8%	-6.2%	-3.0%	-3.9%
Level 4 Basket (unlimited Canada-wide talk & text and 2 GB data per month)							
2014	\$89.23	\$92.29	\$92.81		\$65.62	\$97.69	\$92.99
2015	\$91.23	\$76.22	\$87.83	\$61.82	\$64.43	\$89.78	\$83.08
CAGR	2.2%	-17.4%	-5.4%		-1.8%	-8.1%	-10.7%
Level 5 Basket (unlimited Canada-wide talk & text and 5 GB data per month)							
2015	\$122.21	\$94.67	\$117.93	\$65.76	\$65.62	\$117.65	\$107.50

Note: Some generally minor changes in methodology apply year-to-year. Averages calculated on a market share & population weighted basis. 2008 and 2009 results for Winnipeg drawn from Wall Communications' 2009 Price Comparison Study. Wall Communications 2015

Table A2.3 - Canadian Mobile Wireless Prices
Incumbent Primary Brands versus Incumbent Flanker Brands Prices

Baskets	Halifax	Montreal	Toronto	Winnipeg	Regina	Vancouver	Average
Level 1 Basket (low-volume use, 150 min/month)							
Primary Brands 2014	\$36.50	\$36.28	\$35.04		\$35.05	\$36.29	\$35.70
Primary Brands 2015	\$37.37	\$37.46	\$37.54	\$32.98	\$32.43	\$38.21	\$37.29
Flanker Brands 2014	\$29.43	\$28.84	\$28.55		\$29.62	\$28.65	\$28.70
Flanker Brands 2015	\$32.10	\$31.49	\$31.21	\$31.87	\$32.29	\$31.31	\$31.39
<i>Percentage Differential 2014</i>	-19%	-21%	-19%		-15%	-21%	-20%
<i>Percentage Differential 2015</i>	-14%	-16%	-17%	-3%	0%	-18%	-16%
Level 2 Basket (450 min and 300 text per month)							
Primary Brands 2014	\$45.40	\$45.59	\$44.29		\$54.29	\$46.20	\$45.26
Primary Brands 2015	\$48.45	\$49.04	\$48.15	\$46.65	\$56.70	\$49.28	\$48.68
Flanker Brands 2014	\$32.63	\$32.55	\$32.17		\$32.82	\$32.15	\$32.31
Flanker Brands 2015	\$38.63	\$38.51	\$38.11	\$38.20	\$37.15	\$38.11	\$38.23
<i>Percentage Differential 2014</i>	-28%	-29%	-27%		-40%	-30%	-29%
<i>Percentage Differential 2015</i>	-20%	-21%	-21%	-18%	-34%	-23%	-21%
Level 3 Basket (1200 min, 300 text and 1GB data per month)							
Primary Brands 2014	\$86.91	\$73.59	\$81.00		\$65.33	\$86.46	\$79.69
Primary Brands 2015	\$86.76	\$82.96	\$87.36	\$73.54	\$72.56	\$88.32	\$85.22
Flanker Brands 2014	\$59.03	\$53.36	\$58.75		\$59.22	\$58.61	\$57.10
Flanker Brands 2015	\$74.70	\$59.67	\$74.27	\$64.27	\$64.89	\$74.27	\$69.35
<i>Percentage Differential 2014</i>	-32%	-27%	-27%		-9%	-32%	-28%
<i>Percentage Differential 2015</i>	-14%	-28%	-15%	-13%	-11%	-16%	-19%
Level 4 Basket (unlimited Canada-wide talk & text and 2GB data per month)							
Primary Brands 2014	\$89.23	\$92.29	\$92.81		\$65.62	\$97.69	\$92.99
Primary Brands 2015	\$91.23	\$76.22	\$87.83	\$61.82	\$64.43	\$89.78	\$83.08
Flanker Brands 2014	\$65.09	\$58.73	\$64.31		\$58.95	\$64.31	\$62.55
Flanker Brands 2015	\$80.43	\$65.40	\$80.00	\$58.33	\$58.95	\$80.00	\$74.23
<i>Percentage Differential 2014</i>	-27%	-36%	-31%		-10%	-34%	-33%
<i>Percentage Differential 2015</i>	-12%	-14%	-9%	-6%	-8%	-11%	-11%
Level 5 Basket (unlimited Canada-wide talk & text and 5 GB data per month)							
Primary Brands 2014	\$122.21	\$94.67	\$117.93	\$65.76	\$65.62	\$117.65	\$107.50
Flanker Brands 2015	\$108.10	\$89.73	\$107.67	\$58.33	\$58.95	\$107.67	\$98.93
<i>Percentage Differential 2015</i>	-12%	-5%	-9%	-11%	-10%	-8%	-8%

Notes: Incumbent prices based on market share and population-based weighted averages.
 Incumbent flanker brands given equal weights (i.e., Bell Virgin, Rogers Fido, TELUS Koodo given 1/3 weight each); although Rogers Chatr assumed to have a relatively limited market share as in the case of the new entrants in those cities where it is available.
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Table A2.4 - Canadian Broadband Internet Service Prices

Baskets	Halifax	Montreal	Toronto	Winnipeg	Regina	Vancouver	Average
Level 1 (speed, usage/mth): (i) ≤ 1.5 Mbps, 2 GB for 2008-11 and (ii) ≤ 3 Mbps, 5GB for 2012-13, 7.5 GB in 2014, 10GB in 2015							
2008	\$34.95	\$32.45	\$38.95	\$29.95	\$30.45	\$23.45	\$32.88
2009	\$35.95	\$28.43	\$35.45	\$30.95	\$30.45	\$24.95	\$30.98
2010	\$36.95	\$29.43	\$33.45		\$30.95	\$29.00	\$31.44
2011	\$36.15	\$36.90	\$34.15		\$32.52	\$33.00	\$34.85
2012	\$39.15	\$33.35	\$45.37		\$31.95	\$35.40	\$39.37
2013	\$42.15	na	na		\$31.95	\$39.00	\$38.91
2014	\$40.15	na	\$50.95		\$42.95	na	\$50.00
2015	\$55.13	na	na	na	\$34.10	na	\$47.51
CAGR	6.7%				1.6%		5.4%
Level 2 (speed, usage/mth): (i) 1.5 - 9 Mbps, 15 GB for 2008-11 and (ii) 4 - 15 Mbps, 20 GB for 2012-13, 30 GB in 2014, 50GB in 2015							
2008	\$47.45	\$48.95	\$48.95	\$41.95	\$45.45	\$40.95	\$46.58
2009	\$48.45	\$50.43	\$50.95	\$42.95	\$45.45	\$38.45	\$47.26
2010	\$49.45	\$51.43	\$47.95		\$45.95	\$40.00	\$47.60
2011	\$50.75	\$52.83	\$49.33		\$48.52	\$45.65	\$49.79
2012	\$57.75	\$60.92	\$52.79		\$54.95	\$46.40	\$54.31
2013	\$51.15	\$55.60	\$47.18		\$54.95	\$53.51	\$51.20
2014	\$54.95	\$53.91	\$55.25		\$54.95	\$56.68	\$55.10
2015	\$74.45	\$54.83	\$55.17	\$59.17	\$52.88	\$59.90	\$56.66
CAGR	6.6%	1.6%	1.7%	5.0%	2.2%	5.6%	2.8%
Level 3 (speed, usage/mth): (i) 10 - 19 Mbps, 30 GB for 2008-11 and (ii) 16 - 40 Mbps, 50 GB for 2012-13, 75 GB in 2014, 100GB in 2015							
2008	\$57.45	\$83.45	\$73.95	\$52.95	\$55.95	\$50.95	\$68.74
2009	\$58.45	\$64.40	\$62.45	\$52.95	\$55.95	\$53.45	\$60.08
2010	\$59.45	\$65.40	\$62.45		\$56.45	\$55.48	\$61.88
2011	\$60.75	\$66.33	\$65.35		\$56.75	\$55.00	\$63.44
2012	\$88.95	\$66.95	\$72.17		\$79.95	\$54.60	\$67.94
2013	\$77.95	\$67.05	\$64.35		\$79.95	\$60.69	\$65.18
2014	\$87.95	\$67.15	\$70.87		\$70.95	\$62.00	\$68.60
2015	\$92.95	\$59.93	\$71.39	\$67.93	\$62.88	\$68.17	\$67.81
CAGR	7.1%	-4.6%	-0.5%	3.6%	1.7%	4.2%	-0.2%
Level 4 (speed, usage/mth): (i) > 20 Mbps, 50 GB for 2011 and (ii) > 40 Mbps, 75 GB for 2012-13, 120 GB in 2014, 150GB in 2015							
2011	\$84.75	\$73.30	\$73.75		\$99.95	\$91.40	\$77.71
2012	\$138.95	\$82.95	\$106.98		na	\$74.90	\$94.39
2013	\$102.75	\$82.95	\$80.57		\$99.95	\$85.00	\$82.88
2014	\$99.55	\$84.75	\$86.87		\$105.95	\$86.00	\$86.46
2015	\$99.26	\$74.51	\$79.68	\$87.10	\$105.80	\$89.79	\$80.63
CAGR	4.0%	0.4%	2.0%		1.4%	-0.4%	0.9%

Note: Some generally minor changes in methodology apply year-to-year. Averages calculated on a market share & population weighted basis.

"na" - no surveyed service provider offer broadband service within specified speed range.

Download speed ranges and monthly data usage were increased in 2012 which increased prices in 2012 relative to 2011 in some cases.

2008 and 2009 results for Winnipeg drawn from Wall Communications' 2009 Price Comparison Study.

Wall Communications 2015

Table A2.5 - Canadian Mobile Internet Prices

Baskets	Halifax	Montreal	Toronto	Winnipeg	Regina	Vancouver	Average
Level 1 Basket (2GB usage per month)							
2010	\$54.15	\$54.15	\$54.15		\$56.23	\$54.16	\$54.19
2011	\$52.32	\$52.76	\$52.17		\$53.98	\$52.22	\$52.41
2012	\$53.05	\$52.56	\$52.51		\$53.05	\$52.51	\$52.55
2013	\$45.12	\$44.52	\$44.37		\$48.99	\$44.52	\$44.55
2014	\$43.75	\$43.22	\$43.19		\$47.08	\$43.30	\$43.30
2015	\$43.06	\$43.63	\$43.19	\$44.88	\$50.38	\$43.30	\$43.55
CAGR	-4.5%	-4.2%	-4.4%		-2.2%	-4.4%	-4.3%
Level 2 Basket (5 GB usage per month)							
2012	\$66.38	\$60.94	\$65.59		\$69.55	\$70.22	\$65.11
2013	\$66.79	\$59.22	\$65.21		\$70.11	\$71.28	\$64.67
2014	\$67.08	\$59.49	\$65.60		\$68.75	\$65.90	\$63.90
2015	\$65.73	\$60.57	\$65.60	\$68.63	\$71.88	\$65.90	\$64.48
CAGR	-0.3%	-0.2%	0.0%		1.1%	-2.1%	-0.3%

Averages calculated on a market share and population weighted basis.

Wall Communications 2015

Table A2.6 - Canadian Bundled Service Prices

Baskets	Halifax	Montreal	Toronto	Winnipeg	Regina	Vancouver	Average
Bundle 1 (Wireline-Broadband-Mobile)							
2008	\$139.86	\$141.61	\$152.20	\$125.07	\$140.02	\$152.47	\$146.96
2009	\$135.63	\$141.37	\$152.65	\$132.22	\$120.12	\$122.22	\$139.86
2010	\$132.23	\$135.16	\$139.75		\$125.12	\$118.30	\$133.83
2011	\$132.10	\$131.72	\$138.69		\$130.36	\$124.54	\$133.50
2012	\$134.44	\$140.06	\$146.09		\$133.85	\$129.11	\$140.47
2013	\$131.27	\$142.46	\$144.41		\$141.80	\$122.25	\$139.15
2014	\$130.02	\$147.46	\$147.28		\$137.55	\$133.21	\$143.95
2015	\$160.86	\$152.89	\$170.33	\$133.71	\$138.55	\$140.76	\$157.20
CAGR	2.0%	1.1%	1.6%	1.0%	-0.2%	-1.1%	1.0%
Bundle 2 (Wireline-Broadband-TV)							
2008	\$124.71	\$118.68	\$126.54	\$114.83	\$112.13	\$111.40	\$119.93
2009	\$121.14	\$123.46	\$129.71	\$121.76	\$115.13	\$110.31	\$122.43
2010	\$120.37	\$116.94	\$123.39		\$119.47	\$108.36	\$118.41
2011	\$121.46	\$119.09	\$129.92		\$127.52	\$112.05	\$122.87
2012	\$124.19	\$127.91	\$135.81		\$131.56	\$111.81	\$128.44
2013	\$127.95	\$139.67	\$140.25		\$133.57	\$111.87	\$134.19
2014	\$144.34	\$134.74	\$145.16		\$124.63	\$123.57	\$137.51
2015	\$171.00	\$139.37	\$147.79	\$124.39	\$124.66	\$121.95	\$139.78
CAGR	4.6%	2.3%	2.2%	1.1%	1.5%	1.3%	2.2%
Bundle 3 (Wireline-Broadband-Mobile-TV)							
2008	\$178.86	\$182.13	\$183.94	\$153.06	\$148.97	\$186.47	\$181.31
2009	\$169.03	\$181.24	\$182.81	\$168.21	\$142.07	\$151.22	\$172.68
2010	\$169.19	\$168.65	\$169.82		\$145.81	\$158.98	\$167.01
2011	\$170.01	\$164.24	\$177.48		\$160.04	\$150.77	\$167.81
2012	\$171.85	\$171.99	\$179.85		\$181.58	\$166.61	\$174.71
2013	\$165.50	\$179.99	\$183.73		\$186.56	\$155.97	\$176.80
2014	\$180.02	\$179.87	\$186.56		\$167.45	\$174.55	\$181.70
2015	\$217.93	\$186.00	\$195.47	\$154.39	\$170.48	\$176.51	\$187.33
CAGR	2.9%	0.3%	0.9%	0.1%	1.9%	-0.8%	0.5%

Note: Some generally minor changes in methodology apply year-to-year. Averages calculated on a market share & population weighted basis.

Bundle prices in 2012 have increased relative to 2011, in some cases, due to the changes in the broadband service speeds.

2008 and 2009 results for Winnipeg drawn from Wall Communications' 2009 Price Comparison Study.

Wall Communications 2015

ATTACHMENT 3 – INTERNATIONAL PRICE COMPARISONS

Table A3.1 - International Wireline Prices

Baskets		Canada	U.S.	U.K.	France	Australia	Japan	Germany	Italy
Own Currency									
Wireline Level 1	2008	\$30.88	\$31.68	£17.14	€ 22.43	\$53.84			
	2009	\$29.80	\$31.56	£18.57	€ 22.95	\$54.91			
	2010	\$31.16	\$32.63	£19.35	€ 23.29	\$54.35	¥2,767		
	2011	\$32.06	\$34.23	£20.58	€ 26.71	\$55.81	¥2,766		
	2012	\$33.42	\$35.77	£18.04	€ 22.45	\$56.60	¥2,766		
	2013	\$35.33	\$35.85	£18.21	€ 23.27	\$57.87	¥2,741		
	2014	\$38.99	\$33.94	£20.10	€ 23.88	\$57.35	¥2,737	€ 23.43	€ 26.56
	2015	\$40.64	\$29.70	£22.10	€ 25.66	\$57.89	¥2,740	€ 24.51	€ 25.48
	CAGR	4.0%	-0.9%	3.7%	1.9%	1.0%	-0.2%	4.6%	-4.1%
Wireline Level 2	2008	\$47.91	\$56.64	£24.24	€ 41.25	\$104.43			
	2009	\$50.05	\$56.92	£26.19	€ 41.22	\$105.95			
	2010	\$51.42	\$56.76	£26.15	€ 41.10	\$105.28	¥5,416		
	2011	\$49.81	\$56.77	£27.66	€ 38.68	\$88.87	¥5,555		
	2012	\$51.71	\$57.09	£25.30	€ 36.98	\$91.81	¥5,561		
	2013	\$55.77	\$55.36	£24.33	€ 36.04	\$96.30	¥5,554		
	2014	\$54.37	\$52.41	£25.85	€ 33.83	\$82.27	¥5,659	€ 36.82	€ 33.02
	2015	\$59.44	\$49.73	£27.88	€ 32.11	\$78.52	¥5,241	€ 37.65	€ 32.98
	CAGR	3.1%	-1.8%	2.0%	-3.5%	-4.0%	-0.7%	2.2%	-0.1%
Wireline Level 3	2008	\$60.27	\$66.21	£32.87	€ 48.20	\$117.00			
	2009	\$61.55	\$65.33	£36.11	€ 49.48	\$117.00			
	2010	\$60.78	\$63.69	£36.17	€ 47.76	\$116.14	¥8,430		
	2011	\$60.22	\$60.76	£36.45	€ 48.12	\$99.51	¥8,578		
	2012	\$60.52	\$60.49	£35.54	€ 44.94	\$109.14	¥8,587		
	2013	\$61.53	\$59.45	£35.25	€ 38.19	\$120.00	¥8,746		
	2014	\$60.29	\$56.56	£34.11	€ 35.65	\$91.35	¥8,822	€ 39.02	€ 43.91
	2015	\$64.96	\$55.93	£36.21	€ 32.11	\$86.62	¥8,136	€ 39.99	€ 42.15
	CAGR	1.1%	-2.4%	1.4%	-5.6%	-4.2%	-0.7%	2.5%	-4.0%
CDN\$ - PPP									
Wireline Level 1	2008	\$30.88	\$37.82	\$32.32	\$28.73	\$43.35			
	2009	\$29.80	\$39.45	\$35.24	\$31.24	\$45.20			
	2010	\$31.16	\$39.75	\$35.32	\$31.53	\$44.45	\$27.23		
	2011	\$32.06	\$44.84	\$34.35	\$37.86	\$45.86	\$29.55		
	2012	\$33.42	\$46.84	\$28.22	\$32.34	\$46.57	\$29.84		
	2013	\$35.33	\$45.88	\$31.68	\$33.53	\$46.30	\$30.45		
	2014	\$38.99	\$43.13	\$33.28	\$35.10	\$46.80	\$31.61	\$36.55	\$41.04
	2015	\$40.64	\$38.49	\$36.60	\$37.85	\$47.41	\$30.41	\$38.57	\$40.09
	CAGR	4.0%	0.3%	1.8%	4.0%	1.3%	2.2%	5.5%	-2.3%
Wireline Level 2	2008	\$47.91	\$67.63	\$45.71	\$52.84	\$84.09			
	2009	\$50.05	\$71.15	\$49.68	\$56.10	\$87.22			
	2010	\$51.42	\$69.13	\$47.74	\$55.63	\$86.10	\$53.30		
	2011	\$49.81	\$74.37	\$46.18	\$54.83	\$73.02	\$59.33		
	2012	\$51.71	\$74.75	\$39.57	\$53.29	\$75.55	\$60.00		
	2013	\$55.77	\$70.85	\$42.35	\$51.93	\$77.05	\$61.70		
	2014	\$54.37	\$66.61	\$42.81	\$49.72	\$67.13	\$65.36	\$57.46	\$51.02
	2015	\$59.44	\$64.45	\$46.17	\$47.37	\$64.31	\$58.18	\$59.24	\$51.90
	CAGR	3.1%	-0.7%	0.1%	-1.5%	-3.8%	1.8%	3.1%	1.7%
Wireline Level 3	2008	\$60.27	\$79.05	\$61.99	\$61.74	\$94.21			
	2009	\$61.55	\$81.66	\$68.51	\$67.35	\$96.32			
	2010	\$60.78	\$77.58	\$66.03	\$64.65	\$94.98	\$82.95		
	2011	\$60.22	\$79.59	\$60.86	\$68.20	\$81.77	\$91.61		

Canadian and International Price Comparisons – 2015 Update

2012	\$60.52	\$79.21	\$55.60	\$64.76	\$89.81	\$92.65		
2013	\$61.53	\$76.08	\$61.35	\$55.03	\$96.00	\$97.17		
2014	\$60.29	\$71.88	\$56.48	\$52.39	\$74.54	\$101.90	\$60.89	\$67.85
2015	\$64.96	\$72.48	\$59.97	\$47.37	\$70.94	\$90.31	\$62.93	\$66.32
CAGR	1.1%	-1.2%	-0.5%	-3.7%	-4.0%	1.7%	3.3%	-2.2%

Baskets		Canada	U.S.	U.K.	France	Australia	Japan	Germany	Italy
CDN\$ - Exchange Rate									
Wireline Level 1	2008	\$30.88	\$31.52	\$34.02	\$34.21	\$49.26			
	2009	\$29.80	\$39.45	\$33.25	\$37.64	\$46.12			
	2010	\$31.16	\$34.27	\$31.54	\$33.54	\$51.09	\$33.21		
	2011	\$32.06	\$33.71	\$32.72	\$36.06	\$55.25	\$33.20		
	2012	\$33.42	\$36.31	\$28.50	\$29.40	\$59.71	\$35.95		
	2013	\$35.33	\$35.57	\$28.80	\$30.76	\$60.13	\$30.15		
	2014	\$38.99	\$37.50	\$36.98	\$36.18	\$57.07	\$30.11	\$35.49	\$40.24
	2015	\$40.64	\$35.64	\$40.67	\$36.05	\$56.44	\$27.40	\$34.44	\$35.80
	CAGR	4.0%	1.8%	2.6%	0.8%	2.0%	-3.8%	-3.0%	-11.0%
Wireline Level 2	2008	\$47.91	\$56.36	\$48.11	\$62.91	\$95.55			
	2009	\$50.05	\$71.15	\$46.87	\$67.59	\$89.00			
	2010	\$51.42	\$59.59	\$42.62	\$59.18	\$98.96	\$65.00		
	2011	\$49.81	\$55.92	\$43.98	\$52.22	\$87.98	\$66.67		
	2012	\$51.71	\$57.95	\$39.97	\$48.45	\$96.86	\$72.30		
	2013	\$55.77	\$54.92	\$38.50	\$47.64	\$100.06	\$61.09		
	2014	\$54.37	\$57.92	\$47.57	\$51.26	\$81.86	\$62.25	\$55.79	\$50.02
	2015	\$59.44	\$59.67	\$51.30	\$45.12	\$76.55	\$52.41	\$52.90	\$46.34
	CAGR	3.1%	0.8%	0.9%	-4.6%	-3.1%	-4.2%	-5.2%	-7.4%
Wireline Level 3	2008	\$60.27	\$65.88	\$65.25	\$73.50	\$107.06			
	2009	\$61.55	\$81.66	\$64.63	\$81.15	\$98.28			
	2010	\$60.78	\$66.88	\$58.96	\$68.78	\$109.17	\$101.16		
	2011	\$60.22	\$59.85	\$57.96	\$64.96	\$98.52	\$102.93		
	2012	\$60.52	\$61.40	\$56.16	\$58.88	\$115.14	\$111.63		
	2013	\$61.53	\$58.98	\$55.77	\$50.49	\$124.68	\$96.21		
	2014	\$60.29	\$62.50	\$62.76	\$54.01	\$90.90	\$97.04	\$59.12	\$66.52
	2015	\$64.96	\$67.11	\$66.63	\$45.12	\$84.45	\$81.36	\$56.19	\$59.22
	CAGR	1.1%	0.3%	0.3%	-6.7%	-3.3%	-4.3%	-5.0%	-11.0%

Note that some generally minor changes in methodology apply year-to-year.

For each year, the latest available OECD Purchasing Power Parity (PPP) indexes along with corresponding market exchange rates were used to convert foreign prices into PPP-adjusted and unadjusted Canadian dollars.

Wall Communications Inc. 2015

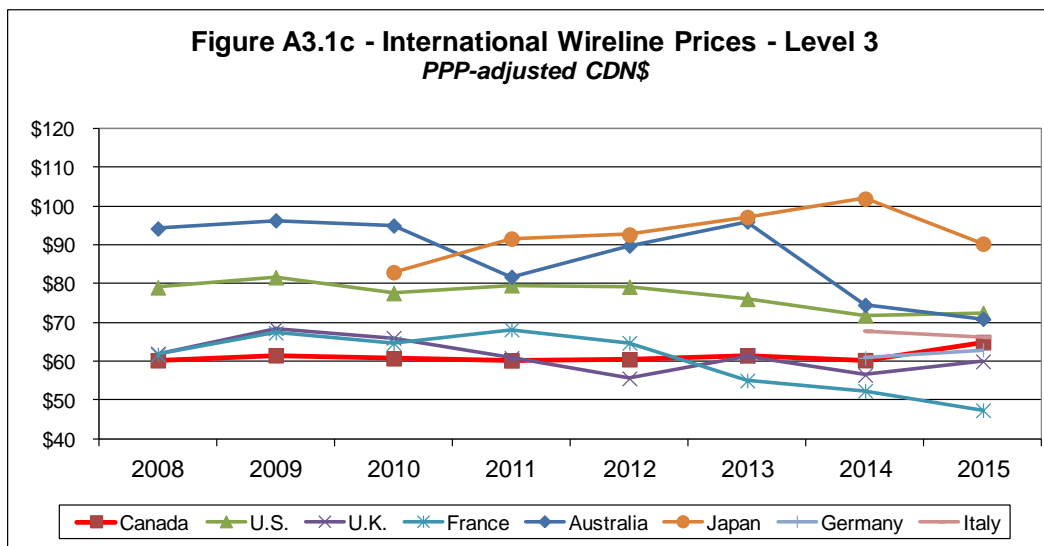
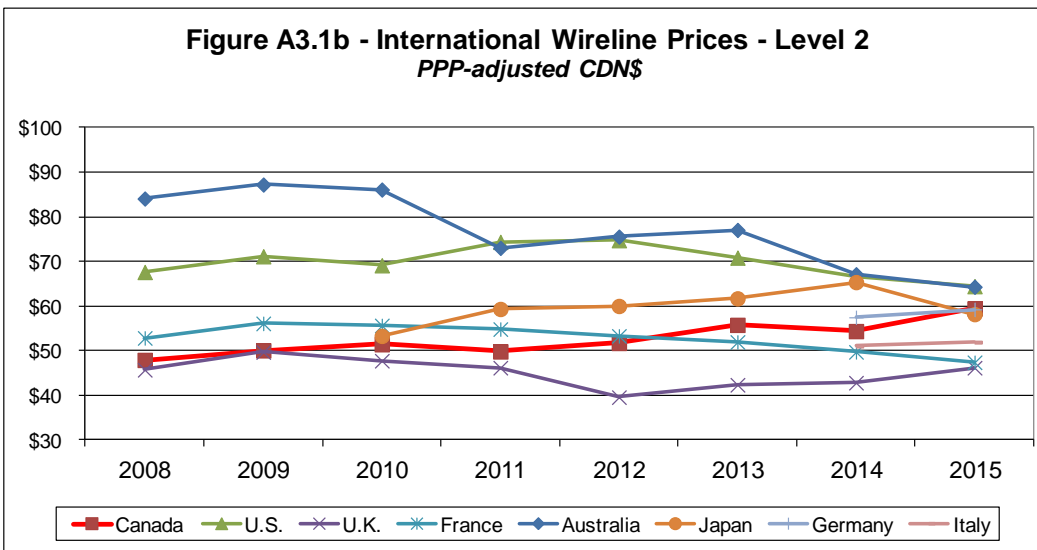
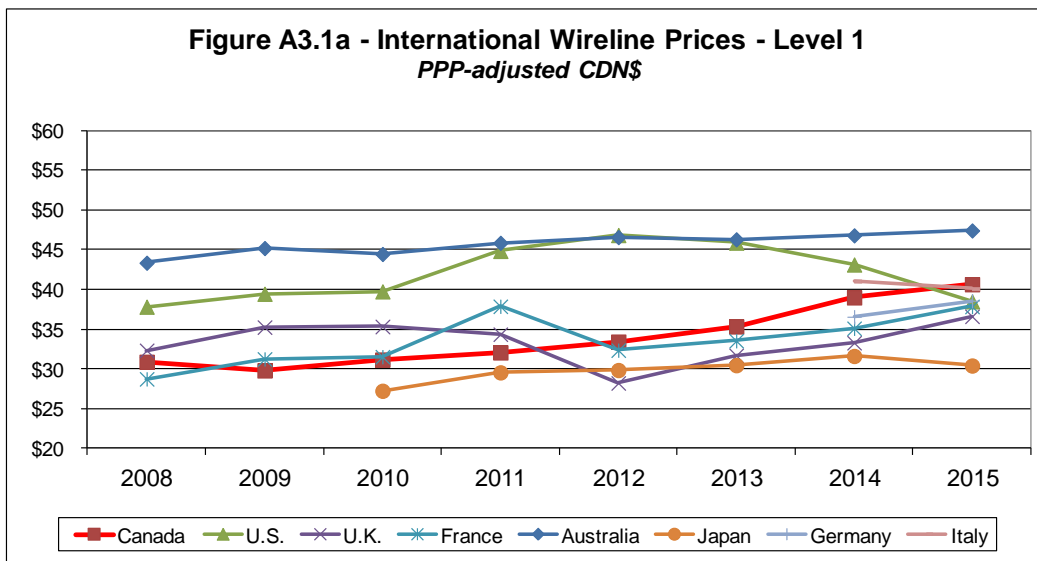


Table A3.2 - International Mobile Wireless Prices

Baskets		Canada	U.S.	U.K.	France	Australia	Japan	Germany	Italy
				Own Currency					
Wireless Level 1	2008	\$32.73	\$34.27	£14.09	€ 18.39	\$27.27			
	2009	\$33.03	\$34.01	£12.82	€ 18.64	\$24.27			
	2010	\$34.03	\$33.20	£12.77	€ 19.61	\$23.18	¥2,459		
	2011	\$33.73	\$25.48	£11.17	€ 18.44	\$25.50	¥2,368		
	2012	\$34.32	\$25.80	£11.00	€ 16.72	\$27.27	¥2,366		
	2013	\$30.71	\$25.85	£12.63	€ 14.04	\$27.27	¥2,528		
	2014	\$35.70	\$23.88	£15.98	€ 14.12	\$30.99	¥2,501	€ 10.69	€ 7.02
	2015	\$37.29	\$28.58	£14.19	€ 9.66	\$30.95	¥2,453	€ 9.68	€ 7.72
	CAGR	1.9%	-2.6%	0.1%	-8.8%	1.8%	-0.1%	-9.4%	10.0%
Wireless Level 2	2008	\$60.81	\$54.06	£28.63	€ 43.95	\$40.86			
	2009	\$57.78	\$53.10	£23.57	€ 45.19	\$44.55			
	2010	\$53.49	\$49.75	£20.41	€ 50.76	\$43.60	¥4,506		
	2011	\$50.51	\$52.43	£19.62	€ 52.81	\$44.99	¥4,601		
	2012	\$51.31	\$55.71	£24.57	€ 42.42	\$42.00	¥4,567		
	2013	\$44.86	\$59.50	£22.33	€ 30.59	\$43.79	¥3,993		
	2014	\$45.26	\$44.00	£24.86	€ 25.55	\$47.42	¥4,414	€ 23.37	€ 21.75
	2015	\$48.68	\$44.44	£20.30	€ 27.70	\$47.59	¥4,938	€ 22.46	€ 14.29
	CAGR	-3.1%	-2.8%	-4.8%	-6.4%	2.2%	1.8%	-3.9%	-34.3%
Wireless Level 3	2008	\$112.34	\$113.67	£47.85	€ 86.23	\$120.16			
	2009	\$103.24	\$106.06	£40.25	€ 80.13	\$113.14			
	2010	\$109.59	\$101.81	£38.06	€ 80.80	\$112.41	¥11,909		
	2011	\$99.69	\$106.12	£38.50	€ 71.08	\$89.90	¥11,256		
	2012	\$98.37	\$108.30	£44.30	€ 58.83	\$63.61	¥10,984		
	2013	\$93.59	\$113.93	£36.50	€ 40.87	\$61.92	¥11,273		
	2014	\$79.69	\$72.02	£43.56	€ 43.33	\$88.37	¥12,112	€ 45.59	€ 43.40
	2015	\$85.22	\$66.09	£41.08	€ 41.69	\$85.43	¥8,015	€ 45.70	€ 34.28
	CAGR	-3.9%	-7.5%	-2.2%	-9.9%	-4.8%	-7.6%	0.2%	-21.0%
Wireless Level 4	2014	\$92.99	\$86.00	£35.25	€ 34.12	\$104.00	na	€ 51.67	€ 39.81
	2015	\$83.08	\$71.17	£37.46	€ 32.70	\$95.00	na	€ 45.48	€ 40.33
	CAGR	-10.7%	-17.2%	6.3%	-4.2%	-8.7%		-12.0%	1.3%
Wireless Level 5	2015	\$ 107.50	\$101.17	£41.62	€ 41.32	\$118.96	na	€ 65.29	€ 49.21
CDN\$ - PPP									
Wireless Level 1	2008	\$32.73	\$40.92	\$26.57	\$23.55	\$21.96			
	2009	\$33.03	\$42.51	\$24.33	\$25.37	\$19.98			
	2010	\$34.03	\$40.43	\$23.31	\$26.54	\$18.96	\$24.20		
	2011	\$33.73	\$33.38	\$18.64	\$26.13	\$20.95	\$25.29		
	2012	\$34.32	\$33.78	\$17.21	\$24.09	\$22.44	\$25.53		
	2013	\$30.71	\$33.08	\$21.97	\$20.24	\$21.82	\$28.09		
	2014	\$35.70	\$30.34	\$26.46	\$20.75	\$25.28	\$28.88	\$16.68	\$10.85
	2015	\$37.29	\$37.04	\$23.50	\$14.26	\$25.35	\$27.23	\$15.23	\$12.15
	CAGR	1.9%	-1.4%	-1.7%	-6.9%	2.1%	2.4%	-8.7%	12.0%
Wireless Level 2	2008	\$60.81	\$64.54	\$53.98	\$56.30	\$32.90			
	2009	\$57.78	\$66.38	\$44.73	\$61.51	\$36.67			
	2010	\$53.49	\$60.60	\$37.27	\$68.70	\$35.65	\$44.34		
	2011	\$50.51	\$68.69	\$32.75	\$74.86	\$36.97	\$49.14		
	2012	\$51.31	\$72.94	\$38.43	\$61.13	\$34.56	\$49.28		
	2013	\$44.86	\$76.14	\$38.85	\$44.08	\$35.04	\$44.36		
	2014	\$45.26	\$55.91	\$41.17	\$37.55	\$38.69	\$50.98	\$36.48	\$33.61
	2015	\$48.68	\$57.59	\$33.62	\$40.87	\$38.98	\$54.81	\$35.35	\$22.48
	CAGR	-3.1%	-1.6%	-6.5%	-4.5%	2.4%	4.3%	-3.1%	-33.1%

Canadian and International Price Comparisons – 2015 Update

Wireless Level 3	2008	\$112.34	\$135.72	\$90.23	\$110.46	\$96.75			
	2009	\$103.24	\$132.58	\$76.36	\$109.08	\$93.13			
	2010	\$109.59	\$124.01	\$69.49	\$109.37	\$91.93	\$117.19		
	2011	\$99.69	\$139.03	\$64.27	\$100.75	\$73.87	\$120.21		
	2012	\$98.37	\$141.80	\$69.30	\$84.77	\$52.35	\$118.51		
	2013	\$93.59	\$145.79	\$63.52	\$58.90	\$49.54	\$125.24		
	2014	\$79.69	\$91.52	\$72.14	\$63.68	\$72.10	\$139.90	\$71.15	\$67.06
	2015	\$85.22	\$85.65	\$68.03	\$61.50	\$69.97	\$88.96	\$71.91	\$53.94
	CAGR	-3.9%	-6.4%	-4.0%	-8.0%	-4.5%	-5.4%	1.1%	-19.6%
Wireless Level 4	2014	\$92.99	\$109.28	\$58.37	\$50.14	\$84.85	na	\$80.63	\$61.52
	2015	\$83.08	\$92.23	\$62.03	\$48.24	\$77.80	na	\$71.56	\$63.47
	CAGR	-10.7%	-15.6%	6.3%	-3.8%	-8.3%		-11.2%	3.2%
Wireless Level 5	2015	\$107.50	\$131.12	\$68.93	\$60.96	\$97.43	na	\$102.74	\$77.44
Baskets									
CDN\$ - Exchange Rate									
Wireless Level 1	2008	\$32.73	\$34.10	\$27.97	\$28.04	\$24.95			
	2009	\$33.03	\$42.51	\$22.96	\$30.56	\$20.39			
	2010	\$34.03	\$34.86	\$20.81	\$28.23	\$21.79	\$29.51		
	2011	\$33.73	\$25.10	\$17.76	\$24.89	\$25.25	\$28.42		
	2012	\$34.32	\$26.19	\$17.38	\$21.90	\$28.77	\$30.76		
	2013	\$30.71	\$25.64	\$19.98	\$18.57	\$28.34	\$27.81		
	2014	\$35.70	\$26.38	\$29.40	\$21.39	\$30.83	\$27.51	\$16.19	\$10.64
	2015	\$37.29	\$34.29	\$26.11	\$13.58	\$30.18	\$24.53	\$13.60	\$10.85
	CAGR	1.9%	0.1%	-1.0%	-9.8%	2.8%	-3.6%	-16.0%	2.0%
Wireless Level 2	2008	\$60.81	\$53.79	\$56.83	\$67.03	\$37.39			
	2009	\$57.78	\$66.38	\$42.19	\$74.11	\$37.42			
	2010	\$53.49	\$52.24	\$33.27	\$73.09	\$40.98	\$40.98		
	2011	\$50.51	\$51.64	\$31.19	\$71.30	\$44.54	\$55.21		
	2012	\$51.31	\$56.54	\$38.82	\$55.58	\$44.31	\$59.38		
	2013	\$44.86	\$59.03	\$35.32	\$40.44	\$45.50	\$43.92		
	2014	\$45.26	\$48.62	\$45.74	\$38.71	\$47.18	\$48.56	\$35.41	\$32.95
	2015	\$48.68	\$53.33	\$37.36	\$38.92	\$46.40	\$49.38	\$31.56	\$20.07
	CAGR	-3.1%	-0.1%	-5.8%	-7.5%	3.1%	3.8%	-10.9%	-39.1%
Wireless Level 3	2008	\$112.34	\$113.10	\$94.98	\$131.50	\$109.95			
	2009	\$103.24	\$132.58	\$72.04	\$131.42	\$95.03			
	2010	\$109.59	\$106.90	\$62.04	\$116.35	\$105.67	\$105.67		
	2011	\$99.69	\$104.53	\$61.21	\$95.96	\$89.00	\$135.07		
	2012	\$98.37	\$109.92	\$70.00	\$77.07	\$67.11	\$142.79		
	2013	\$93.59	\$113.02	\$57.74	\$54.03	\$64.34	\$124.00		
	2014	\$79.69	\$79.58	\$80.16	\$65.65	\$87.92	\$133.24	\$69.08	\$65.75
	2015	\$85.22	\$79.30	\$75.59	\$58.57	\$83.30	\$80.15	\$64.21	\$48.16
	CAGR	-3.9%	-4.9%	-3.2%	-10.9%	-3.9%	-5.4%	-7.0%	-26.7%
Wireless Level 4	2014	\$92.99	\$95.03	\$64.86	\$51.69	\$103.48	na	\$78.28	\$60.32
	2015	\$83.08	\$85.40	\$68.92	\$45.94	\$92.62	na	\$63.89	\$56.67
	CAGR	-10.7%	-10.1%	6.3%	-11.1%	-10.5%		-18.4%	-6.1%
Wireless Level 5	2015	\$107.50	\$121.41	\$76.59	\$58.05	\$115.98	na	\$91.73	\$69.14

Note that some generally minor changes in methodology apply year-to-year.

For each year, the latest available OECD Purchasing Power Parity (PPP) indexes along with corresponding market exchange rates were used to convert foreign prices into PPP-adjusted and unadjusted Canadian dollars.

"na" indicates that service packages meeting the baskets requirements were not available from the surveyed service providers.

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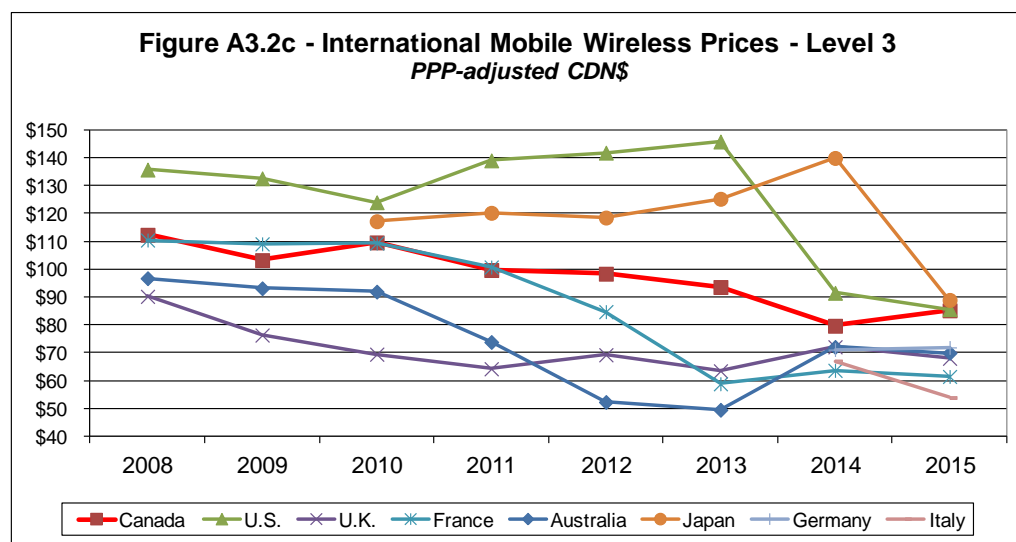
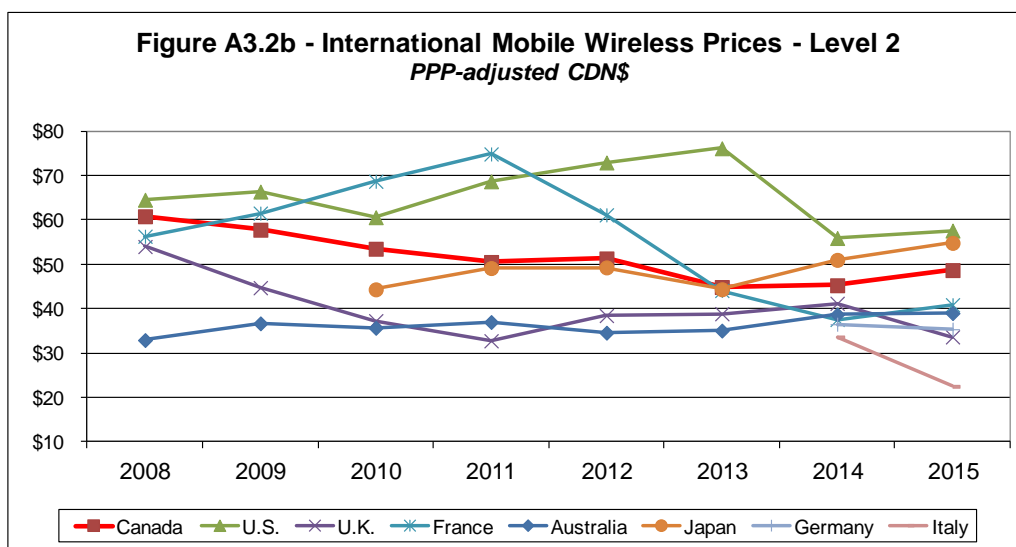
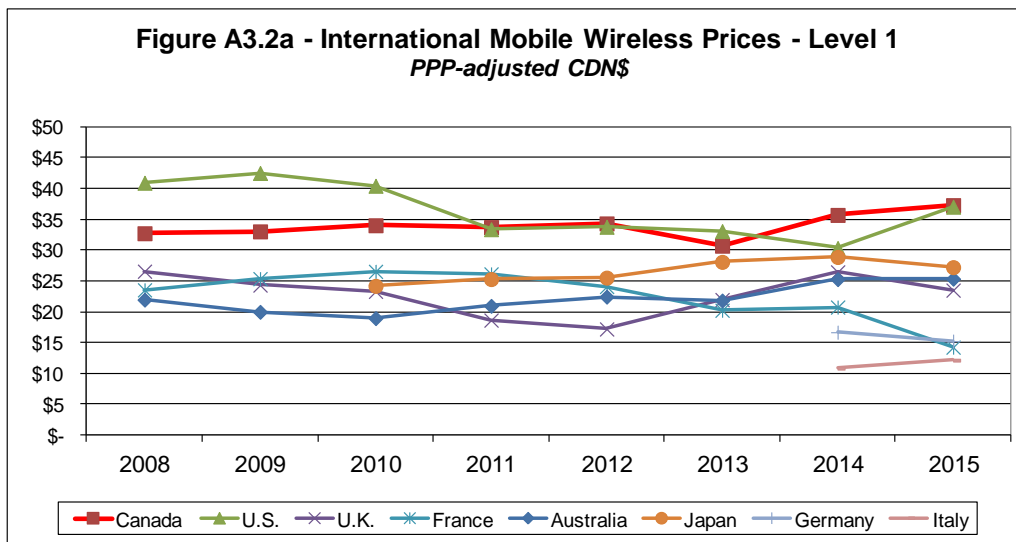


Table A3.3 - International Broadband Internet Service Prices

Baskets		Canada	U.S.	U.K.	France	Australia	Japan	Germany	Italy	
Own Currency										
Broadband Level 1	2008	\$ 32.88	\$28.28	£15.87	€ 32.97	\$53.15				
	2009	\$ 30.98	\$32.15	na	€ 32.97	\$50.18				
	2010	\$ 31.44	\$32.52	na	na	\$42.69	¥4,038			
	2011	\$ 34.85	\$38.97	na	€ 19.98	\$36.32	¥4,038			
	2012	\$ 39.37	\$43.72	na	na	na	¥4,678			
	2013	\$ 38.91	\$40.93	na	na	na	¥4,100			
	2014	\$ 50.00	\$49.20	na	na	na	¥4,896	na	na	
	2015	\$ 47.51	\$42.09	na	na	na	¥5,210	na	na	
	CAGR		5.4%	5.8%				5.2%		
	Broadband Level 2	2008	\$ 46.58	\$46.88	£23.36	€ 35.77	\$77.69			
2009		\$ 47.26	\$46.34	£15.93	€ 35.77	\$77.45				
2010		\$ 47.60	\$48.41	£22.22	€ 32.53	\$63.60	¥5,036			
2011		\$ 49.79	\$49.72	£24.39	€ 33.44	\$69.05	¥5,036			
2012		\$ 54.31	\$60.21	£19.50	€ 32.60	\$72.68	¥5,162			
2013		\$ 51.20	\$63.62	£18.88	na	\$72.68	¥4,728			
2014		\$ 55.10	\$57.38	£18.25	na	\$62.11	¥5,251	€ 16.72	€ 33.82	
2015		\$ 56.66	\$52.20	na	€ 45.94	\$65.63	¥5,498	€ 18.48	€ 34.52	
CAGR			2.8%	1.5%	3.6%	-2.4%	1.8%	10.5%	2.1%	
Broadband Level 3		2008	\$ 68.74	\$56.45	£27.96	€ 38.57	\$94.97			
	2009	\$ 60.08	\$56.33	£18.94	€ 35.07	\$94.73				
	2010	\$ 61.88	\$61.79	£25.33	€ 42.44	\$90.87	¥7,332			
	2011	\$ 63.44	\$60.76	£24.01	€ 46.82	\$72.68	¥5,104			
	2012	\$ 67.94	\$74.08	£26.14	€ 31.97	\$74.96	¥5,503			
	2013	\$ 65.18	\$77.44	£24.71	€ 34.24	\$71.38	¥5,537			
	2014	\$ 68.60	\$62.77	£28.31	€ 34.80	\$82.65	¥5,531	€ 24.55	€ 34.25	
	2015	\$ 67.81	\$70.64	£24.91	€ 35.03	\$85.04	¥5,811	€ 29.92	€ 33.22	
	CAGR		-0.2%	3.3%	-1.6%	-1.4%	-1.6%	-4.5%	21.9%	-3.0%
	Broadband Level 4	2011	\$ 77.71	\$72.57	£29.99	€ 35.12	\$81.77	¥5,595		
2012		\$ 94.39	\$122.94	£37.50	€ 43.28	\$99.95	¥5,806			
2013		\$ 82.88	\$96.33	£30.64	€ 37.88	\$90.86	¥5,841			
2014		\$ 86.46	\$81.19	£28.84	€ 38.09	\$86.20	¥5,864	€ 37.50	€ 39.98	
2015		\$ 80.63	\$81.71	£30.65	€ 39.28	\$88.72	¥5,885	€ 37.70	€ 38.41	
CAGR			0.9%	3.0%	0.5%	2.8%	2.1%	1.3%	0.5%	-3.9%
CDN\$ - PPP										
Broadband Level 1	2008	\$32.88	\$33.77	\$29.93	\$42.23	\$42.79				
	2009	\$30.98	\$40.19	na	\$44.87	\$41.31				
	2010	\$31.44	\$39.61	na	na	\$34.91	\$39.73			
	2011	\$34.85	\$51.06	na	\$28.33	\$29.84	\$43.13			
	2012	\$39.37	\$57.24	na	na	na	\$50.48			
	2013	\$38.91	\$52.38	na	na	na	\$45.55			
	2014	\$50.00	\$62.53	na	na	na	\$56.55	na	na	
	2015	\$47.51	\$54.54	na	na	na	\$57.83	na	na	
	CAGR		7.2%	10.8%				9.2%		
	Broadband Level 2	2008	\$46.58	\$55.97	\$44.05	\$45.82	\$62.56			
2009		\$47.26	\$57.92	\$30.22	\$48.69	\$63.76				
2010		\$47.60	\$58.97	\$40.57	\$44.03	\$52.01	\$49.55			
2011		\$49.79	\$65.14	\$40.72	\$47.41	\$56.74	\$53.79			
2012		\$54.31	\$78.84	\$30.50	\$46.97	\$59.81	\$55.70			
2013		\$51.20	\$81.42	\$32.85	na	\$58.15	\$52.53			
2014		\$55.10	\$72.91	\$30.22	na	\$50.67	\$60.65	\$26.09	\$52.26	
2015		\$56.66	\$67.66	na	\$67.78	\$53.75	\$61.03	\$29.08	\$54.31	
CAGR			2.8%	2.7%	5.8%	-2.1%	4.3%	11.4%	3.9%	

Canadian and International Price Comparisons – 2015 Update

Broadband Level 3	2008	\$68.74	\$67.40	\$52.72	\$49.41	\$76.47			
	2009	\$60.08	\$70.41	\$35.93	\$47.73	\$77.98			
	2010	\$61.88	\$75.26	\$46.24	\$57.45	\$74.32	\$72.15		
	2011	\$63.44	\$79.60	\$40.09	\$66.37	\$59.72	\$54.52		
	2012	\$67.94	\$97.00	\$40.88	\$46.07	\$61.69	\$59.37		
	2013	\$65.18	\$99.10	\$43.01	\$49.34	\$57.10	\$61.52		
	2014	\$68.60	\$79.76	\$46.89	\$51.15	\$67.44	\$63.88	\$38.30	\$52.92
	2015	\$67.81	\$91.55	\$41.25	\$51.68	\$69.64	\$64.50	\$47.08	\$52.28
CAGR		-0.2%	4.5%	-3.4%	0.6%	-1.3%	-2.2%	22.9%	-1.2%
Broadband Level 4	2011	\$77.71	\$95.07	\$50.07	\$49.79	\$67.19	\$59.76		
	2012	\$94.39	\$160.97	\$58.66	\$62.36	\$82.25	\$62.65		
	2013	\$82.88	\$123.27	\$53.31	\$54.58	\$72.69	\$64.89		
	2014	\$86.46	\$103.17	\$47.76	\$55.98	\$70.33	\$67.73	\$58.52	\$61.79
	2015	\$80.63	\$105.90	\$50.75	\$57.95	\$72.66	\$65.32	\$59.32	\$60.45
CAGR		0.9%	2.7%	0.3%	3.9%	2.0%	2.3%	1.4%	-2.2%
Baskets									
CDN\$ - Exchange Rate									
Broadband Level 1	2008	\$32.88	\$28.14	\$31.51	\$50.27	\$48.63			
	2009	\$30.98	\$40.19	na	\$54.06	\$42.15			
	2010	\$31.44	\$34.15	na	na	\$40.13	\$48.46		
	2011	\$34.85	\$38.39	na	\$26.98	\$35.96	\$48.46		
	2012	\$39.37	\$44.37	na	na	na	\$60.82		
	2013	\$38.91	\$40.60	na	na	na	\$45.10		
	2014	\$50.00	\$54.37	na	na	na	\$53.86	na	na
	2015	\$47.51	\$50.50	na	na	na	\$52.10	na	na
CAGR		7.2%	11.6%				2.7%		
Broadband Level 2	2008	\$46.58	\$46.64	\$46.37	\$54.54	\$71.09			
	2009	\$47.26	\$57.92	\$28.51	\$58.66	\$65.06			
	2010	\$47.60	\$50.83	\$36.22	\$46.84	\$59.79	\$60.43		
	2011	\$49.79	\$48.98	\$38.78	\$45.15	\$68.36	\$60.43		
	2012	\$54.31	\$61.12	\$30.81	\$42.70	\$76.68	\$67.10		
	2013	\$51.20	\$63.11	\$29.87	na	\$75.52	\$52.01		
	2014	\$55.10	\$63.40	\$33.58	na	\$61.80	\$57.76	\$25.33	\$51.24
	2015	\$56.66	\$62.65	na	\$64.55	\$63.99	\$54.98	\$25.96	\$48.50
CAGR		2.8%	4.3%		2.4%	-1.5%	-1.9%	2.5%	-5.4%
Broadband Level 3	2008	\$68.74	\$56.17	\$55.50	\$58.82	\$86.89			
	2009	\$60.08	\$70.41	\$33.90	\$57.51	\$79.57			
	2010	\$61.88	\$64.88	\$41.29	\$61.12	\$85.42	\$87.99		
	2011	\$63.44	\$59.85	\$38.18	\$63.21	\$71.96	\$61.25		
	2012	\$67.94	\$75.19	\$41.29	\$41.88	\$79.09	\$71.54		
	2013	\$65.18	\$76.82	\$39.10	\$45.27	\$74.16	\$60.91		
	2014	\$68.60	\$69.36	\$52.10	\$52.73	\$82.24	\$60.84	\$37.19	\$51.88
	2015	\$67.81	\$84.77	\$45.83	\$49.22	\$82.91	\$58.11	\$42.03	\$46.68
CAGR		-0.2%	6.1%	-2.7%	-2.5%	-0.7%	-8.0%	13.0%	-10.0%
Broadband Level 4	2011	\$77.71	\$71.48	\$47.69	\$47.41	\$80.96	\$67.15		
	2012	\$94.39	\$124.78	\$59.25	\$56.69	\$105.45	\$75.48		
	2013	\$82.88	\$95.56	\$48.47	\$50.08	\$94.41	\$64.25		
	2014	\$86.46	\$89.71	\$53.07	\$57.71	\$85.77	\$64.51	\$56.82	\$60.58
	2015	\$80.63	\$98.05	\$56.39	\$55.19	\$86.50	\$58.85	\$52.96	\$53.97
CAGR		0.9%	8.2%	4.3%	3.9%	1.7%	-3.2%	-6.8%	-10.9%

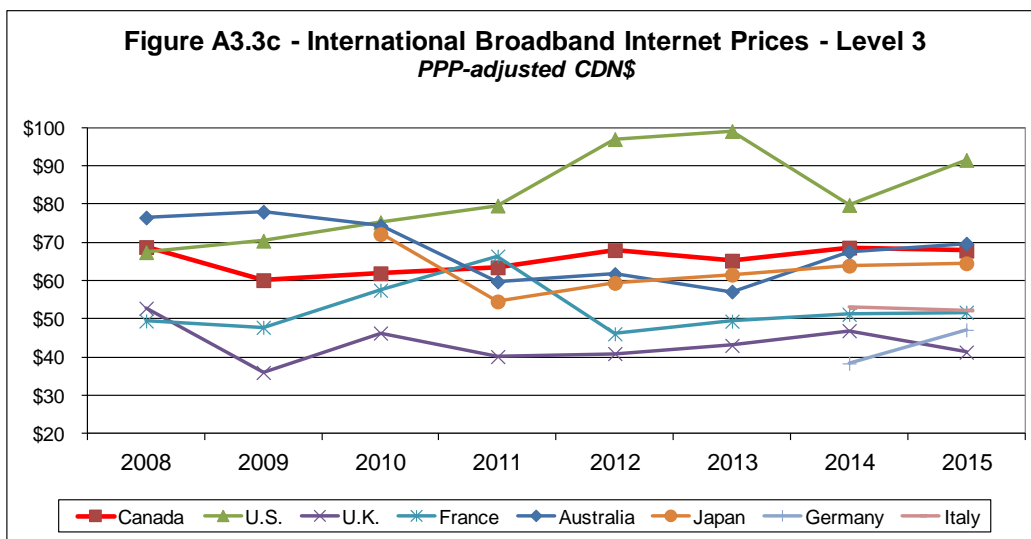
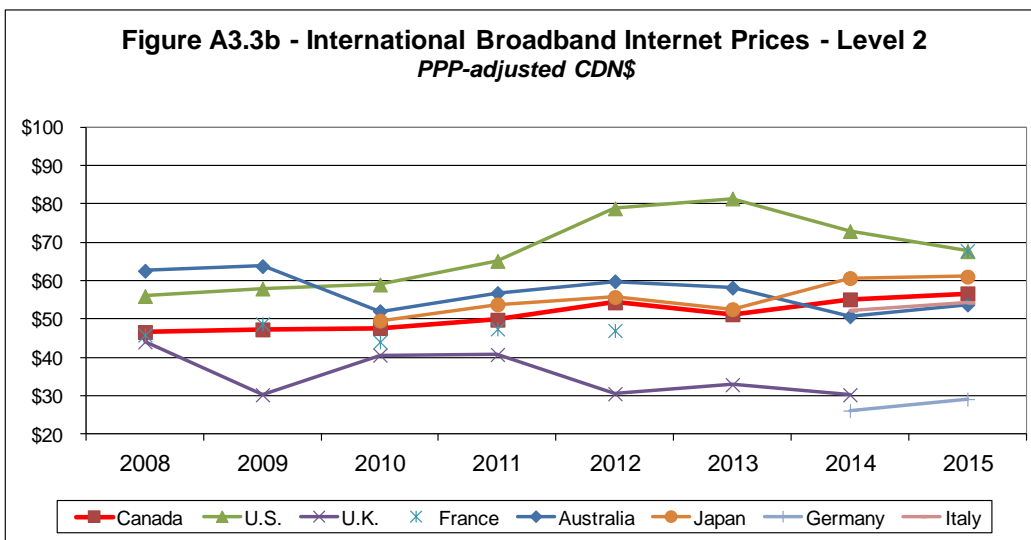
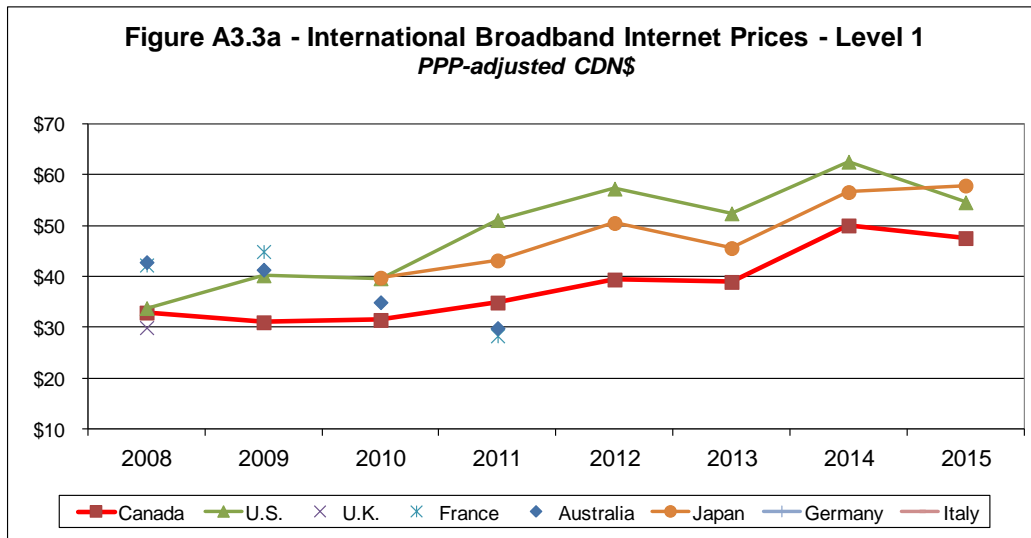
Note that some generally minor changes in methodology apply year-to-year.

"na" implies that no service currently marketed by the surveyed companies in the defined speed range.

For each year, the latest available OECD Purchasing Power Parity (PPP) indexes along with corresponding market exchange rates were used to convert foreign prices into PPP-adjusted and unadjusted Canadian dollars.

Note that speed ranges and monthly data usage levels were increased in 2012 for all four service levels, which had the effect of increasing prices in 2012 and later relative to earlier years in some cases.

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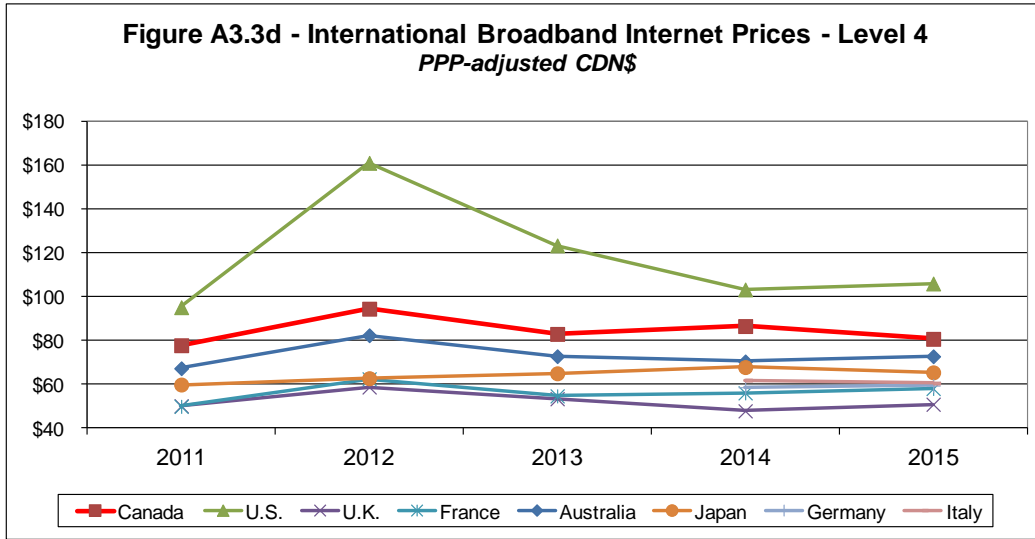


Table A3.4 - International Mobile Internet Prices

Baskets		Canada	U.S.	U.K.	France	Australia	Japan	Germany	Italy
Own Currency									
Level 1 (2 GB/month)	2010	\$54.19	\$60.15	£13.62	€ 34.20	\$41.44	¥7,724		
	2011	\$52.41	\$54.58	£14.08	€ 30.54	\$33.08	¥6,497		
	2012	\$52.55	\$39.94	£17.53	€ 27.31	\$38.14	¥5,087		
	2013	\$44.55	\$42.68	£13.63	€ 24.27	\$36.00	¥5,179		
	2014	\$43.30	\$50.16	£13.23	€ 12.57	\$31.46	¥4,333	€ 22.03	€ 11.36
	2015	\$43.55	\$48.63	£12.94	€ 11.93	\$34.38	¥4,999	€ 16.50	€ 10.08
	CAGR	-4.3%	-4.2%	-1.0%	-19.0%	-3.7%	-8.3%	-25.1%	-11.2%
Level 2 (5 GB/month)	2012	\$65.11	\$53.09	£25.00	€ 69.50	\$54.50	¥5,261		
	2013	\$64.67	\$46.75	£35.63	€ 30.99	\$43.91	¥5,242		
	2014	\$63.90	\$54.34	£27.74	€ 29.29	\$45.10	¥5,372	€ 31.85	€ 16.73
	2015	\$64.48	\$59.97	£18.48	€ 19.78	\$50.90	¥5,749	€ 23.62	€ 17.19
	CAGR	-0.3%	4.1%	-9.6%	-34.2%	-2.3%	3.0%	-25.8%	2.7%
CDN\$ - PPP									
Level 1 (2 GB/month)	2010	\$54.19	\$73.26	\$24.86	\$46.29	\$33.89	\$76.00		
	2011	\$52.41	\$71.50	\$23.51	\$43.30	\$27.18	\$69.38		
	2012	\$52.55	\$52.29	\$27.42	\$39.36	\$31.38	\$54.89		
	2013	\$44.55	\$54.61	\$23.71	\$34.98	\$28.80	\$57.54		
	2014	\$43.30	\$63.74	\$21.90	\$18.47	\$25.67	\$50.05	\$34.37	\$17.56
	2015	\$43.55	\$63.02	\$21.44	\$17.60	\$28.15	\$55.49	\$25.96	\$15.87
	CAGR	-4.3%	-3.0%	-2.9%	-17.6%	-3.6%	-6.1%	-24.5%	-9.6%
Level 2 (5 GB/month)	2012	\$65.11	\$69.51	\$39.11	\$100.15	\$44.85	\$56.77		
	2013	\$64.67	\$59.82	\$62.01	\$44.65	\$35.13	\$58.24		
	2014	\$63.90	\$69.05	\$45.93	\$43.04	\$36.80	\$62.04	\$49.70	\$25.86
	2015	\$64.48	\$77.72	\$30.60	\$29.18	\$41.69	\$63.82	\$37.17	\$27.05
	CAGR	-0.3%	3.8%	-7.9%	-33.7%	-2.4%	4.0%	-25.2%	4.6%
CDN\$ - Exchange Rate									
Level 1 (2 GB/month)	2010	\$54.19	\$63.16	\$22.20	\$49.24	\$38.95	\$92.69		
	2011	\$52.41	\$53.76	\$22.39	\$41.23	\$32.75	\$77.96		
	2012	\$52.55	\$40.53	\$27.69	\$35.78	\$40.23	\$66.14		
	2013	\$44.55	\$42.34	\$21.56	\$32.09	\$37.40	\$56.97		
	2014	\$43.30	\$55.43	\$24.33	\$19.04	\$31.31	\$47.67	\$33.37	\$17.21
	2015	\$43.55	\$58.36	\$23.82	\$16.76	\$33.52	\$49.99	\$23.18	\$14.17
	CAGR	-4.3%	-1.6%	1.4%	-19.4%	-3.0%	-11.6%	-30.5%	-17.7%
Level 2 (5 GB/month)	2012	\$65.11	\$53.88	\$39.50	\$91.05	\$57.50	\$68.39		
	2013	\$64.67	\$46.38	\$56.37	\$40.97	\$45.62	\$57.66		
	2014	\$63.90	\$60.04	\$51.04	\$44.38	\$44.87	\$59.09	\$48.25	\$25.35
	2015	\$64.48	\$71.96	\$34.00	\$27.79	\$49.63	\$57.49	\$33.18	\$24.15
	CAGR	-0.3%	10.1%	-4.9%	-32.7%	-4.8%	-5.6%	-31.2%	-4.7%

Note that some generally minor changes in methodology apply year-to-year.
For each year, the latest available OECD Purchasing Power Parity (PPP) indexes along with corresponding market exchange rates were used to convert foreign prices into PPP-adjusted and unadjusted Canadian dollars.
Wall Communications Inc. 2015

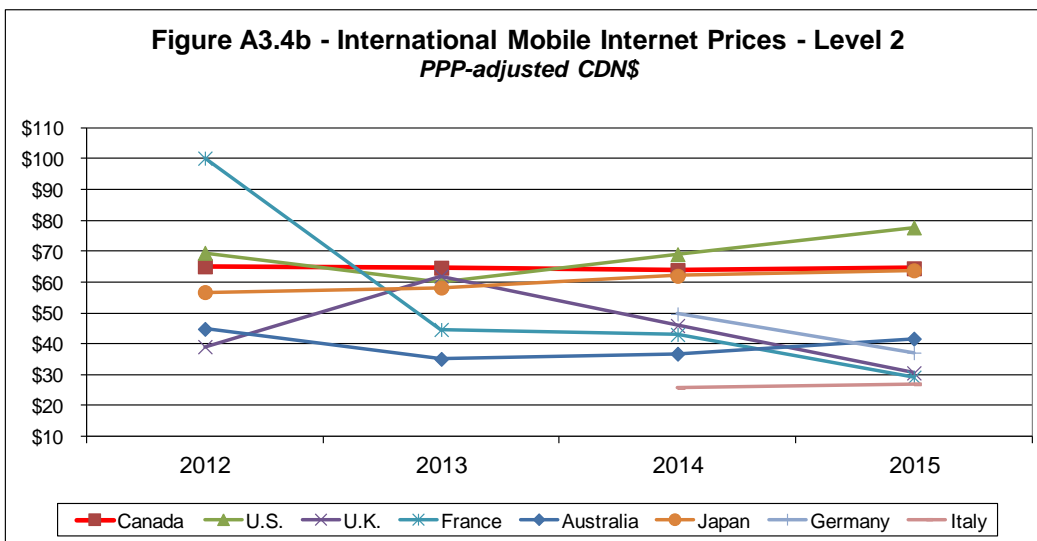
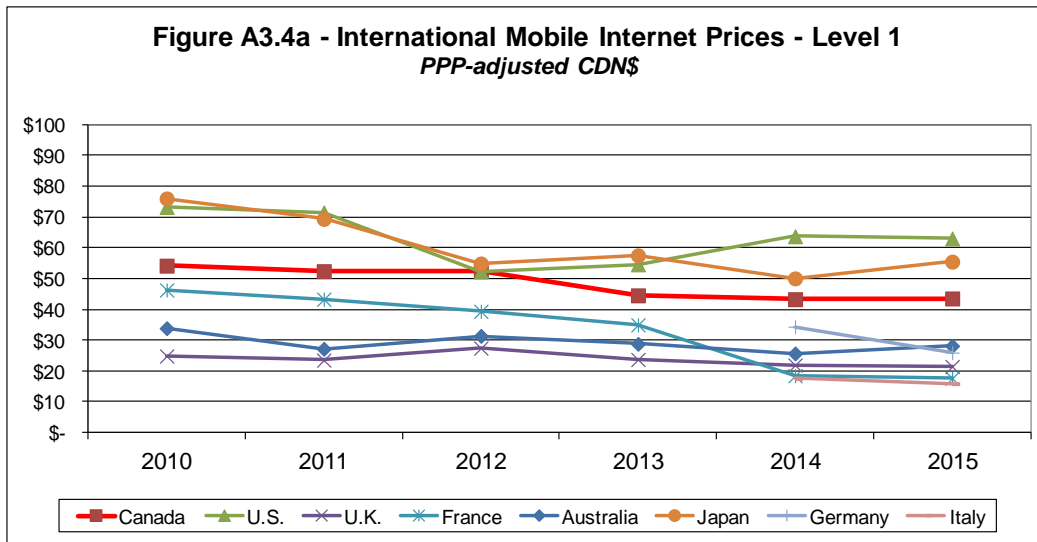


Table A3.5 - International Bundled Service Prices

Baskets		Canada	U.S.	U.K.	France	Australia	Japan	Germany	Italy
Own Currency									
Bundle 1 (Fixed-BB- Mobile)	2008	\$146.96	\$147.40	£73.11	€ 107.87	\$191.03			
	2009	\$139.86	\$142.19	£66.65	€ 110.12	\$193.53			
	2010	\$133.83	\$135.15	£57.95	€ 105.77	\$161.75	¥13,931		
	2011	\$133.50	\$139.42	£57.12	€ 98.87	\$176.81	¥14,037		
	2012	\$140.47	\$142.88	£63.02	€ 84.62	\$185.28	¥14,618		
	2013	\$139.15	\$144.57	£64.01	€ 66.36	\$183.05	¥13,468		
	2014	\$143.95	\$128.36	£63.65	€ 48.01	\$184.23	¥13,972	€ 71.47	€ 69.85
	2015	\$157.20	\$119.43	£56.80	€ 56.09	\$178.24	¥14,106	€ 83.29	€ 66.34
CAGR	1.0%	-3.0%	-3.5%	-8.9%	-1.0%	0.2%	16.5%	-5.0%	
Bundle 2 (Fixed-BB- TV)	2008	\$119.93	\$129.89	£47.13	€ 67.46	\$181.41			
	2009	\$122.43	\$131.05	£48.07	€ 67.42	\$183.26			
	2010	\$118.41	\$135.43	£50.79	€ 70.44	\$160.18	¥12,906		
	2011	\$122.87	\$132.73	£49.24	€ 52.01	\$169.76	¥12,896		
	2012	\$128.44	\$135.30	£44.74	€ 47.35	\$180.92	¥13,482		
	2013	\$134.19	\$131.22	£46.29	€ 48.00	\$181.59	¥12,352		
	2014	\$137.51	\$135.41	£42.46	€ 47.57	\$174.64	¥12,963	€ 70.73	€ 60.69
	2015	\$139.78	\$130.11	£46.82	€ 36.84	\$166.59	¥12,336	€ 75.04	€ 58.23
CAGR	2.2%	0.0%	-0.1%	-8.3%	-1.2%	-0.9%	6.1%	-4.1%	
Bundle 3 (All four services)	2008	\$181.31	\$180.17	£74.57	€ 110.40	\$225.53			
	2009	\$172.68	\$170.58	£60.71	€ 112.65	\$231.24			
	2010	\$167.01	\$172.84	£64.11	€ 120.26	\$201.30	¥17,533		
	2011	\$167.81	\$181.88	£69.19	€ 103.39	\$218.17	¥18,043		
	2012	\$174.71	\$183.79	£72.44	€ 87.71	\$226.19	¥18,723		
	2013	\$176.80	\$175.12	£70.67	€ 70.33	\$222.79	¥16,437		
	2014	\$181.70	\$168.71	£61.31	€ 63.43	\$223.60	¥17,575	€ 101.24	€ 80.85
	2015	\$187.33	\$151.39	£57.80	€ 63.48	\$214.50	¥17,510	€ 99.63	€ 74.33
CAGR	0.5%	-2.5%	-3.6%	-7.6%	-0.7%	0.0%	-1.6%	-8.1%	
CDN\$ - PPP									
Bundle 1 (Fixed-BB- Mobile)	2008	\$146.96	\$175.99	\$137.87	\$138.18	\$153.82			
	2009	\$139.86	\$177.74	\$126.45	\$149.89	\$159.31			
	2010	\$133.83	\$164.61	\$105.80	\$143.16	\$132.28	\$137.08		
	2011	\$133.50	\$182.65	\$95.36	\$140.15	\$145.28	\$149.91		
	2012	\$140.47	\$187.07	\$98.57	\$121.94	\$152.47	\$157.73		
	2013	\$139.15	\$185.00	\$111.39	\$95.62	\$146.45	\$149.63		
	2014	\$143.95	\$163.11	\$105.40	\$70.56	\$150.32	\$161.38	\$111.52	\$107.94
	2015	\$157.20	\$154.78	\$94.07	\$82.75	\$145.98	\$156.57	\$131.06	\$104.39
CAGR	1.0%	-1.8%	-5.3%	-7.1%	-0.7%	2.7%	17.5%	-3.3%	
Bundle 2 (Fixed-BB- TV)	2008	\$119.93	\$155.09	\$88.88	\$86.41	\$146.07			
	2009	\$122.43	\$163.81	\$91.21	\$91.78	\$150.86			
	2010	\$118.41	\$164.95	\$92.72	\$95.34	\$131.00	\$126.99		
	2011	\$122.87	\$173.88	\$82.21	\$73.72	\$139.49	\$137.73		
	2012	\$128.44	\$177.15	\$69.98	\$68.23	\$148.88	\$145.47		
	2013	\$134.19	\$167.92	\$80.55	\$69.17	\$145.27	\$137.23		
	2014	\$137.51	\$172.07	\$70.32	\$69.91	\$142.49	\$149.72	\$110.38	\$93.79
	2015	\$139.78	\$168.62	\$77.54	\$54.35	\$136.44	\$136.93	\$118.08	\$91.64
CAGR	2.2%	1.2%	-1.9%	-6.4%	-1.0%	1.5%	7.0%	-2.3%	
Bundle 3 (All four services)	2008	\$181.31	\$215.13	\$140.62	\$141.43	\$181.60			
	2009	\$172.68	\$213.23	\$115.19	\$153.35	\$190.36			
	2010	\$167.01	\$210.52	\$117.04	\$162.78	\$164.62	\$172.52		
	2011	\$167.81	\$238.27	\$115.51	\$146.56	\$179.27	\$192.70		
	2012	\$174.71	\$240.65	\$113.31	\$126.39	\$186.13	\$202.02		
	2013	\$176.80	\$224.09	\$122.98	\$101.35	\$178.24	\$182.62		
	2014	\$181.70	\$214.39	\$101.52	\$93.21	\$182.43	\$202.99	\$157.98	\$124.94
	2015	\$187.33	\$196.20	\$95.72	\$93.64	\$175.67	\$194.36	\$156.78	\$116.97

Canadian and International Price Comparisons – 2015 Update

	CAGR	0.5%	-1.3%	-5.3%	-5.7%	-0.5%	2.4%	-0.8%	-6.4%
Baskets	Canada	U.S.	U.K.	France	Australia	Japan	Germany	Italy	
CDN\$ - Exchange Rate									
Bundle 1 (Fixed-BB- Mobile)	2008	\$146.96	\$146.66	\$145.12	\$164.50	\$174.80			
	2009	\$139.86	\$177.74	\$119.29	\$180.59	\$162.56			
	2010	\$133.83	\$141.91	\$94.46	\$152.30	\$152.05	\$167.17		
	2011	\$133.50	\$137.33	\$90.82	\$133.48	\$175.04	\$168.44		
	2012	\$140.47	\$145.02	\$99.56	\$110.85	\$195.47	\$190.04		
	2013	\$139.15	\$143.41	\$101.26	\$87.73	\$190.19	\$148.15		
	2014	\$143.95	\$141.83	\$117.12	\$72.74	\$183.31	\$153.70	\$108.27	\$105.82
	2015	\$157.20	\$143.31	\$104.52	\$78.81	\$173.78	\$141.06	\$117.02	\$93.21
	CAGR	1.0%	-0.3%	-4.6%	-10.0%	-0.1%	-3.3%	8.1%	-11.9%
Bundle 2 (Fixed-BB- TV)	2008	\$119.93	\$129.24	\$93.55	\$102.87	\$165.99			
	2009	\$122.43	\$163.81	\$86.05	\$110.57	\$153.94			
	2010	\$118.41	\$142.20	\$82.79	\$101.43	\$150.57	\$154.87		
	2011	\$122.87	\$130.74	\$78.29	\$70.21	\$168.06	\$154.75		
	2012	\$128.44	\$137.33	\$70.69	\$62.03	\$190.87	\$175.27		
	2013	\$134.19	\$130.17	\$73.23	\$63.46	\$188.67	\$135.88		
	2014	\$137.51	\$149.63	\$78.13	\$72.07	\$173.77	\$142.59	\$107.16	\$91.95
	2015	\$139.78	\$156.13	\$86.15	\$51.77	\$162.43	\$123.36	\$105.43	\$81.82
	CAGR	2.2%	2.7%	-1.2%	-9.3%	-0.3%	-4.4%	-1.6%	-11.0%
Bundle 3 (All four services)	2008	\$181.31	\$179.27	\$148.02	\$168.36	\$206.36			
	2009	\$172.68	\$213.23	\$108.67	\$184.75	\$194.24			
	2010	\$167.01	\$181.48	\$104.50	\$173.17	\$189.22	\$189.22		
	2011	\$167.81	\$179.15	\$110.01	\$139.58	\$215.99	\$216.52		
	2012	\$174.71	\$186.55	\$114.46	\$114.90	\$238.63	\$243.40		
	2013	\$176.80	\$173.72	\$111.80	\$92.98	\$231.48	\$180.81		
	2014	\$181.70	\$186.42	\$112.80	\$96.09	\$222.48	\$193.33	\$153.38	\$122.49
	2015	\$187.33	\$181.67	\$106.35	\$89.18	\$209.14	\$175.10	\$139.98	\$104.43
	CAGR	0.5%	0.2%	-4.6%	-8.7%	0.2%	-1.5%	-8.7%	-14.7%

Some generally minor changes in methodology apply year-to-year.

For each year, the latest available OECD Purchasing Power Parity (PPP) indexes along with corresponding market exchange rates were used to convert foreign prices into PPP-adjusted and unadjusted Canadian dollars.

Speed ranges and monthly data usage levels were increased in 2012 for all four service levels, which had the effect of increasing prices in 2012 and later relative to earlier years in some cases.

Wall Communications Inc. 2015

