



**COMPARISON OF
WIRELESS SERVICE PRICE LEVELS
IN THE US AND CANADA**

prepared for

MTS Allstream Inc.

by

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TABLE OF CONTENTS

Introduction and Summary	1
Wireless services are offered under far less competitive condition in Canada than in the US	2
In the US, where there are four incumbents with national service footprints and several major regional incumbents, wireless service price levels are generally lower than those being offered in Canada.	3
Competition drives prices down	8
Appendix 1: ETI Canada/US Wireless Pricing Model	9
<i>User Inputs</i>	10
<i>Summary Tables</i>	10
<i>Plans analyzed in the Model</i>	10
<i>Rate elements used to calculate the monthly cost of a plan</i>	11
<i>Assumptions</i>	11
Appendix 2: Authors' Qualifications	13
Tables	
Table 1: Wireless Subscriber Market Share by Province (2005)	3
Table 2: Change in Per-Minute Price and Per-Subscriber Wireless Usage in the US, 1993-2005	6
Table 3: Comparison of Canadian and US wireless service prices	7
Table 4: Availability of Competitive Wireless Service Providers in the US, 1999-2005	8
Table 5: Rate Elements Included in the ETI Wireless Pricing Model	11

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Introduction and Summary

In its *Consultation on a Framework to Auction Spectrum in the 2 GHz Range including Advanced Wireless Services*, Industry Canada notes that “[i]n a dynamically competitive market characterized by rapid technological change, competition and the threat of market entry are generally sufficient to discipline market behaviour and protect consumer interests. However, *where the number of competitors is limited and there are significant barriers to entry, market forces may not yield the same results.*”¹ Separately, in a press release issued in December 2006, the Minister of Industry stated that it is the Government's objective “to ensure that Canada's telecommunications industry is internationally competitive and successful and is shaped to best support our ever evolving and rapidly changing telecommunications needs.”² The release of additional wireless spectrum to support Advanced Wireless Services (“AWS”) has the potential to introduce additional competition and competitors into the Canadian wireless market if the auction process is structured so as to assure that firms other than the three national wireless incumbents – Bell Canada, TELUS, and Rogers – are able to acquire at least some of the new spectrum.

The three incumbent carriers argue that, in fact, the Canadian wireless market *is* competitive and that the creation of one or more new carriers with national market footprints is both unnecessary and inefficient.³ However, spectrum presents an absolute barrier to facilities-based entry. Without the threat or even the possibility of entry, the incumbent carriers have little incentive to engage in serious price competition or to bring prices down to competitive levels. That this is the current state of affairs in the Canadian wireless market can be demonstrated by a comparison of wireless service price levels in the US and Canada. The US and Canadian

1. Industry Canada, *Consultation on a Framework to Auction Spectrum in the 2 GHz Range including Advanced Wireless Services*, DGTP-002-07, February 2007. Emphasis supplied.

2. Industry Canada, Press Release, “Canada's New Government Issues Policy Direction to CRTC that Calls for Greater Reliance on Market Forces,” 18 December 2006.

3. These arguments figured prominently in separate presentations delivered by representatives of Rogers Wireless Inc., BCE Inc., and TELUS at a conference sponsored by the Canadian Wireless Telecommunications Association in Ottawa on April 23, 2007.

wireless markets differ primarily in terms of the number of national service providers and the extent to which the incumbent carriers engage in price-based competition. In most other respects, however, the US and Canadian wireless markets exhibit extensive similarities with respect both to history and to technology. Carriers in both countries commenced operations in the mid-1980s utilizing spectrum in the 800 MHz band that was divided into two blocks – A and B – that were awarded by the respective governments without specific payment or through any auction. In both countries, the B-block was “set aside” for the local wireline telephone company furnishing service in each geographic market, and the A-block was awarded to a non-wireline entity. Both US and Canadian cellular service was based upon analog Advanced Mobile Phone Service (“AMPS”) technology developed in the 1970s by AT&T Bell Laboratories. Digital PCS technology was introduced at about the same time (mid-1990s) in both countries, and today two principal varieties of PCS – CDMA and GSM – are the principal forms of wireless service to be found in both the US and Canada.

The US and Canada are also directly comparable in terms of the type and pricing of *wireline* telephone services. In both countries, the predominant local service pricing model for residential customers is flat-rate; local calling areas are of similar size; wireline long distance prices are similar, and residential wireline service penetration rates are similar and are very high.

For all of these reasons, one would expect that wireless service prices in both countries would be similar. However, our research suggests that price levels in Canada are considerably higher than those being offered in the US. In this paper, we explore the sources of such price level disparities, and document their overall magnitude.

Wireless services are offered under far less competitive conditions in Canada than in the US

There are currently four national wireless service providers in the US – AT&T/Cingular, Verizon Wireless, Sprint/Nextel, and T-Mobile, and several large regional players, including Alltel (about 11-million subscribers), Centennial (roughly 1.3-million), and Leap (about 1.7-million subscribers). While there are nominally three national carriers in Canada (Bell, TELUS and Rogers), the presence of all three is, according to the *CRTC Monitoring Report*, generally confined to Ontario and Quebec and in several principal cities elsewhere (e.g., Vancouver, Edmonton, Calgary, Winnipeg, Halifax), with only one or two providers offering service in the remaining populated areas. Depending upon which measure is used, each of the three national carriers has market share in the 30% range. However, this national view conceals important evidence of market dominance and concentration, which becomes apparent when examined at a more granular level. The CRTC reports wireless market shares separately for each province, revealing a strong linkage between each wireline LEC’s operating footprint and the market share that its wireless affiliate has amassed.

Table 1				
Wireless Subscriber Market Share by Province (2005)				
Province	Bell Group	TELUS	Rogers	Other
British Columbia	10%	46%	44%	0%
Alberta	12%	61%	26%	0%
Saskatchewan	0%	3%	17%	79%
Manitoba	0%	12%	28%	60%
Ontario	38%	18%	44%	1%
Quebec	48%	20%	33%	0%
New Brunswick	73%	6%	21%	0%
Nova Scotia	63%	11%	26%	0%
Prince Edward Island	81%	10%	10%	0%
Newfoundland	86%	10%	4%	0%
The North	100%	0%	0%	0%

Source: CRTC Monitoring Report, 2006, Table 4.6.3.

The CRTC data also fails to consider the effect of the 10-year “enhanced reciprocal roaming/resale agreement” between Bell Canada and TELUS, permitting both companies to expand coverage and avoid capital expenditures by making use of the other's licences and network facilities. Under this arrangement, TELUS benefits by operating seamlessly on Bell's licensed spectrum in Eastern Canada and similarly Bell is using TELUS' licensed spectrum in Western Canada.

The US FCC does not report wireless market share data below the national level, so comparable state-level statistics are not available. However, even though (as in Canada) there is some relationship between each RBOC wireless affiliate's market share and the RBOC's wireline footprint, the variation is considerably smaller than in Canada.

In the US, where there are four incumbents with national service footprints and several major regional incumbents, wireless service price levels are generally lower than those being offered in Canada.

One might expect that the apparently lower level of wireless competition in Canada vis-à-vis the US would result in higher prices in Canada relative to the US, and that certainly appears to be the case. US wireless plans typically include larger “blocks of time” – i.e., airtime usage included within a “monthly calling allowance” – that, except for users at the extreme low-end of the usage level, will almost always result in a substantially lower price per average minute of use than in Canada. In addition, most US wireless rate plans include “free” nationwide long distance calling, whereas in Canada calls placed to points outside of the caller's local calling area are subject to an additional per-minute charge, usually \$0.30, except that on certain high-usage

business calling plans, the charge is \$0.25. Rogers and Bell offer plans than include long distance calling without an additional per minute charge, but at a higher monthly access charge and/or a lower monthly calling allowance than for otherwise comparable plans that do not include long distance calling.

In the US, wireless service providers permit customers to roam anywhere on their own networks without incurring any additional roaming charges. In Canada, however, *incoming* calls placed to wireless phones that are roaming outside of their home local calling areas are subject to long distance surcharges in addition to regular airtime charges. Thus, for example, if a Toronto wireless customer is roaming in Montréal and receives an incoming call that had been dialed to the customer's Toronto (416) number, the customer will be subject to a long distance surcharge (typically \$0.30 per minute) for the transport of the call from Toronto to Montreal. US carriers have no equivalent incoming call surcharges.

Most US pricing plans include “free” in-network calling or some other arrangement that provides for unlimited calling to a specified category of customers.⁴ While some Canadian carriers also offer “free” on-net or other limited “free” calling arrangements,⁵ these apply only with respect to airtime; long distance charges for outbound calls or for inbound calls while roaming beyond the home local calling area, continue to apply.

Virtually all US pricing plans – even low-use prepaid services – provide a full suite of calling features – such as call waiting, caller ID, and voice mail – without any additional charge. This is not the situation in Canada, where such features are subject to *a la carte* pricing, typically in the range of \$6 to \$8 per month.

To facilitate comparisons of Canadian and US wireless price levels, MTS Allstream asked Economics and Technology, Inc. (ETI) to develop a wireless service price-out model that would take account of the complexities attendant to pricing practices in this industry. The details of the ETI model are described in Appendix 1 below. Table 3 below summarizes the results of applying the ETI model to various customer usage profiles. These “baskets” are illustrative, and are not intended to reflect actual or average service volumes. Each “basket” consist of usage volumes in each of several categories, such as “anytime minutes,” “night/weekend minutes,” long distance minutes (expressed as a percentage of total minutes) that include both outgoing long distance and incoming roaming charges, and SMS text messages. In general, usage levels in all of these categories are lower in Canada than in the US, as is the relative amount of long distance calling. Baskets 1 through 4 are intended to represent the range of calling volumes and usage distributions typical of Canadian wireless customers. Basket 5 maintains the same

4. Customers with “family plans” generally receive unlimited calling among handsets within the same “family” group. T-Mobile recently introduced a pricing feature providing for “free” calls to up to five specified telephone numbers, which do not need to be on the T-Mobile network or, for that matter, even be wireless phones.

5. Rogers has recently introduced a “five free” arrangement similar to the T-Mobile offering in the US.

quantity of minutes as in Basket 4, but applies a higher proportion of long distance calling as might be found in the US. Finally, Basket 6 is intended to reflect the higher end of the usage volume range that might be found in the US. These baskets do not reflect any “free” in-network or other no-charge calling (other than night/weekend), since we have no specific basis upon which to estimate their relative incidence. However, to the extent that such “free” calling in Canadian plans still involves long distance and inbound roaming charges whereas in the US no such charges apply, the inclusion of any in-network or similar “free” calling would result in an even greater differential between US and Canadian price levels for all of the baskets that we have evaluated.

We have included US-level usage and long distance calling (Baskets 5 and 6) in the pricing comparison in recognition of the likely impact that the relatively higher price levels extant in Canada may be having upon overall demand for wireless service. In its most recent annual report on competition in the US wireless market, the FCC notes that “there is ample evidence of a sharp decline in mobile telephone prices in the period since the launch of PCS service. One analyst estimated that the average per-minute cost of wireless calling plunged 72 percent in the past five years alone.”⁶ Data compiled by the FCC confirms the strong relationship between the per-minute price of wireless usage (expressed as average revenue per minute (“ARPM”)) and per-subscriber minutes of use per month following the introduction of additional wireless (PCS) service providers in the mid-1990s. For example, in 1993, wireless ARPM in the US was US \$0.44, and average usage per subscriber was 140 minutes per month. By 2005, price (ARPM) had dropped to US \$0.07, and per-subscriber monthly usage volumes had soared to 740 minutes. The FCC pricing and usage statistics are reproduced in Table 2 below:

6. Federal Communications Commission, *Eleventh Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, FCC 06-142, WT Docket No. 06-17, rel. September 29, 2006, at para. 149, citing *Econ One Wireless Survey: Wireless Costs Rise*, News Release, Econ One, Jan. 20, 2005; *Econ One Wireless Survey: Wireless Costs Down*, News Release, Econ One, Jan. 17, 2006. The FCC report notes that “[t]he [Econ One] survey is based on an analysis of pricing plan data collected from carriers’ web sites.”

Table 2				
Change in Per-Minute Price and Per-Subscriber Wireless Usage in the US 1993-2005				
	Average Local Monthly Bill	Minutes of Use Per Month	Average Revenue Per Minute	Annual Change in ARPM
1993	\$61.49	140	\$0.44	
1994	\$56.21	119	\$0.47	8%
1995	\$51.00	119	\$0.43	-9%
1996	\$47.70	125	\$0.38	-11%
1997	\$42.78	117	\$0.37	-4%
1998	\$39.43	136	\$0.29	-21%
1999	\$41.24	185	\$0.22	-23%
2000	\$45.27	255	\$0.18	-20%
2001	\$47.37	380	\$0.12	-30%
2002	\$48.40	427	\$0.11	-9%
2003	\$49.91	507	\$0.10	-13%
2004	\$50.64	584	\$0.09	-12%
2005	\$49.98	740	\$0.07	-22%

Source: FCC *Eleventh Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, FCC 06-142, WT Docket No. 06-17, rel. September 29, 2006, at Table 10, p. 106.

If as a result of increased competition Canadian wireless prices were brought down to US levels with roaming and long distance charges eliminated, it is likely that usage volumes in Canada would experience similar increases. Accordingly, in comparing US and Canadian price levels, it is reasonable to consider usage patterns typical of both countries, as we have undertaken to do here.

US prices have been converted into Canadian currency by applying the OECD Purchasing Power Parities (PPP) applicable to the United State and Canada. The PPPs are developed annually by the OECD⁷ and provide a basis for currency conversions that reflect the relative purchasing power of each currency in its home country, which is a more reliable measure than the more volatile exchange rates, which are influenced by a variety of factors other than

7. OECD statistics on Purchasing Power Parity, available at <http://www.oecd.org/std/ppp> (accessed May 11, 2007).

Wireless Service Price Levels in the US and Canada

purchasing power.⁸ As the table confirms, Canadian wireless price levels are between 3% and 79% above US prices for comparable levels of usage. Although the price differential at low usage levels is relatively small (in part because the lowest usage plans typically offered by US carriers includes more minutes in the monthly calling allowance than is the case for low-use plans offered by Canadian wireless service providers), the price differentials for Canadian plans increase substantially as usage approaches typical US usage patterns. It seems likely that the considerably lower usage levels typical of Canadian users vis-a-vis those south of the border is a direct consequence of the higher Canadian prices applicable for wireless calling. Put differently, if Canadian prices were to drop to US levels, usage volumes in Canada would likely increase to US levels.

Table 3						
Comparison of Canadian and US wireless service prices						
Carrier	Basket 1	Basket 2	Basket 3	Basket 4	Basket 5	Basket 6
	150 MOU: 60 N/W, 90 Anytime, 15% LD, 10 SMS	450 MOU: 180 N/W, 270 Anytime, 15% LD, 50 SMS	800 MOU: 320 N/W, 480 Anytime, 15% LD, 100 SMS	1,200 MOU: 480 N/W, 720 Anytime, 15% LD, 200 SMS	1,200 MOU: 480 N/W, 720 Anytime, 30% LD, 200 SMS	1,800 MOU: 720 N/W, 1080 Anytime, 30% LD, 200 SMS
CANADA						
Rogers	\$42.95	\$54.95	\$83.95	\$146.95	\$151.95	\$200.95
Bell	\$60.20	\$68.95	\$98.70	\$146.95	\$146.95	\$212.95
TELUS	\$46.70	\$49.95	\$86.95	\$116.95	\$132.95	\$175.95
Canadian Average	\$49.95	\$57.95	\$89.87	\$136.95	\$143.95	\$196.62
US (CAD\$)						
Alltel	\$51.05	\$56.58	\$56.58	\$81.18	\$81.18	\$120.54
AT&T	\$50.43	\$55.35	\$71.96	\$79.95	\$79.95	\$104.55
SprintNextel	\$38.75	\$55.35	\$71.96	\$79.95	\$79.95	\$104.55
Verizon Wireless	\$51.05	\$58.43	\$78.11	\$86.10	\$86.10	\$110.70
US Average	\$47.82	\$56.43	\$69.65	\$81.80	\$81.80	\$110.09
Average Canadian price as compared with Average US price	+4%	+3%	+29%	+67%	+76%	+79%
Source: ETI Canada/US Wireless Pricing Model (see Appendix 1). Excludes taxes and government surcharges.						
Note: The price differential between US and Canadian prices is smaller at low usage levels in part because the lowest usage plans typically offered by US carriers includes more minutes in the monthly calling allowance than is the case for low-use plans offered by Canadian wireless service providers. If Canadian prices were to drop to US levels, usage volumes in Canada would likely increase to US levels.						

8. These additional factors include interest rates, balance of trade, and currency arbitrage, among others.

Competition drives prices down

Under the duopoly arrangement that existed in the US until about 1995, there was little price competition between the two incumbents in each market, with per-minute airtime rates remaining largely static in the 50 cent range. Additional charges for roaming outside of the local service area were generally applied, even where both the home and roaming service areas were owned by the same carrier. The entry of additional national service providers – which reached its peak at six in 2003 (see Table 4 below), pushed the per-minute price point down to ten cents or less, introduced “free” wide area and even nationwide roaming, eliminated long distance call charges, and introduced “free” night/weekend and, more recently, in-network calling. Today most major US markets are served by all four of the national carriers, and many are also served by one or more regional carriers as well. While the rate of price level decreases that characterized the US market during the period when competition was at its maximum have abated somewhat, the presence of four national carriers and several regional service providers has worked to maintain wireless prices at their current levels.

Table 4							
Availability of Competitive Wireless Service Providers in the US 1999-2005							
Total Number of Providers in a County	Percent of Total US Population Covered						
	2005 (Eleventh Report)	2004 (Tenth Report)	2003 (Ninth Report)	2002 (Eighth Report)	2001 (Seventh Report)	2000 (Sixth Report)	1999 (Fifth Report)
3 or more	98.0%	96.9%	96.8%	94.7%	94.1%	90.8%	87.8%
4 or more	93.8%	93.2%	93.0%	89.3%	88.7%	84.4%	79.8%
5 or more	50.8%	87.3%	87.5%	82.6%	80.4%	75.1%	68.5%
6 or more	17.6%	41.3%	75.8%	71.1%	53.1%	46.7%	34.6%
7 or more	2.4%	12.6%	29.5%	25.4%	21.2%	11.9%	4.4%

Source: FCC *Eleventh Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, FCC 06-142, WT Docket No. 06-17, rel. September 29, 2006, at Table 11, p. 106.

While price levels in Canada have come down over the past decade, Canadians have not enjoyed the full range of benefits from competition that have emerged in the US market. In many respects, wireless carriers in Canada still operate under largely duopoly conditions. In contrast, there are four facilities-based US carriers with extensive, near-nationwide coverage. In addition, the recent AWS auctions portend the arrival of several entrants that currently have no or only very limited wireless footprints. There is no technological or economic explanation for the substantial differential in price between the US and Canada *other than the difference in market structure*.

Appendix 1

ETI Canada/US Wireless Pricing Model

ETI has developed a wireless service price-out model to facilitate apples-to-apples comparisons of price levels under a variety of Canadian and US wireless rate plans. The typical wireless rate plan consists of a number of pricing elements, principal among which are:

- Monthly service and network access charge, which varies based upon the quantity of “included” minutes and other service elements
- Monthly allowances of “anytime,” “evening,” “weekend,” and “in-network” minutes
- Monthly allowance of SMS text messages
- Additional minutes or “overtime” charges for usage in excess of the monthly allowance
- Additional charges for long distance calls placed to points outside of the customer’s local calling area
- Additional charge per SMS text message above the monthly allowance
- Roaming charges – additional per-minute charges for calls originated or received via a network other than the customer’s “home” service provider
- Features charges, for such features as call waiting, call forwarding, caller ID, voice mail

In order to make direct comparisons of prices being offered by the various service providers in Canada and the US, it is thus necessary to specify a profile or “basket” of the various individual service elements and quantities that carry specific prices or price-affecting attributes.⁹ In the ETI model, the user enters the various “basket” quantities, and the model then computes the monthly charge under various pricing plans being offered by the carrier, selecting the particular plan that, for the specified “basket,” produces the lowest price. For example, suppose that a carrier offers two pricing plans. Plan “A” carries a monthly rate of \$20 and includes 100 minutes of usage, with additional minutes carrying a per-minute charge of \$0.40. Plan “B” carries a monthly rate of \$30 and includes 200 minutes, with the same \$0.40 additional minute charge. For customers whose usage is below 125 minutes, Plan “A” will be the least expensive; for customers whose usage exceeds 125 minutes, Plan “B” will be cheaper. At exactly 125 minutes, the two plans produce the same monthly bill (i.e., \$30).

9. “Price-affecting attributes” might include, for example, the number of minutes in a monthly calling allowance.

User Inputs

In order to use the model, the user must specify quantities for each of the various elements in the rate plan. Certain elements are “hard-wired” into the model – e.g., the model assumes that all customers elect the most popular service features – call waiting, caller ID, and voice mail. The user must specify the number of Anytime, Night/Weekend and In-Network¹⁰ minutes used, as well as the respective percentage of those minutes that constitute long distance calls. Long distance minutes are then calculated by applying the specified long distance percentages to the total minutes in each category. The user also specifies the number of SMS text messages sent. Finally, the model performs currency conversions (from US \$ to CAD \$) based upon the OECD US/Canadian Purchasing Power Parity (PPP), initially set at 1.23,¹¹ but adjustable by the user as more current data is released.

Summary Tables

The model provides summary data for a given set of inputs. The *Summary by Carrier* table presents the lowest cost plan as modeled for each carrier: Rogers, TELUS, Bell Canada, Alltel, AT&T (Cingular), Sprint, and Verizon Wireless. The lowest cost plan in the table will automatically be highlighted in yellow. The *Summary by Region* table displays the lowest cost plan as modeled for each region: Ontario, British Columbia, Prince Edward Island, or Canada overall and the US. The lowest cost value will be highlighted in yellow. The table also presents the lowest cost plan in Alltel’s and Rogers’ “North America” offerings – plans that provide for roaming and long distance calling anywhere within Canada and the US without any additional roaming or long distance charges.

Plans analyzed in the Model

The plans in the model are intended to constitute a representative sample of available plans from each carrier. US carriers generally apply the same pricing and other plan parameters wherever their service is available nationwide. Canadian carrier prices vary by customer location for some plans, and so the model includes several representative locations – British Columbia, Ontario (Toronto and Thunder Bay) and Prince Edward Island. In the US, plans offering “anytime minute” calling allowances in the range of 200-500, 750-800 and 900-1,000 minutes were included. Similarly, Canadian plans offering calling allowances in the 200-500

10. The term “In-Network” refers to calls between two wireless phones both of which are served by the same wireless service provider.

11. OECD statistics on Purchasing Power Parity, available at <http://www.oecd.org/std/ppp> (accessed May 11, 2007).

minute range (if 500 minute plans were an available option for a carrier, that plan was used), and plans with 750-800 and 900-1,000 minutes. Virtually all US rate plans make no distinction between “local” and “long distance” calling, and do not impose any additional “long distance” calling charges. Most of the lower-priced Canadian rate plans retain the local/long distance distinction, and apply additional charges for long distance calling. Some Canadian rate plans do include long distance calling, and these were modeled as well.

Rate elements used to calculate the monthly cost of a plan

The following table summarizes the principal rate elements that are examined in the pricing model:

Table 5	
Rate Elements Included in the ETI Wireless Pricing Model	
Rate Element	Description
Access	Includes the monthly charge for the plan, and in Canada, the “System Access Fee”
Additional Minutes charge	The price per minute of additional airtime in excess of the monthly allowance(s)
Long Distance charge	The price per minute of placing a long distance call that is applied in addition to airtime (the model also includes the price of a bundle of LD minutes where available and economical)
Anytime Minutes	The number of anytime minutes included in the monthly usage allowance
Night/Weekend Minutes	The number of night/weekend minutes included in the monthly usage allowance
In-Network Minutes	The number of minutes of calling to/from other customers on the same carrier’s wireless network included in the monthly usage allowance
SMS text message allowance	The number of SMS text messages included in the monthly usage allowance
SMS text message charge	The price per SMS text message in excess of the monthly allowance(s)
Features charges	The monthly rate for voicemail and CallerID, or the least expensive bundle including both features.

Assumptions

The model makes a number of conservative assumptions. Some rate plans provide a one-time bucket of “bonus minutes” in exchange for the consumer agreeing to a term contract. These bonus minutes can be used over some specified number of months or, in some cases, over the full contract term. Where such bonus minutes are offered, the model assumes that the customer elects the longest term/largest bucket available, and that the bonus minutes are spread evenly across the number of months during which they may be used. When a rate plan includes “front

loaded” limited time bonuses such as “3 free months local calling” or “50% off [monthly access] for 3 months” these limited promotional offers were not included in the model. Taxes, 911 fees, regulatory fees, and universal service surcharges were not included in the cost model. One-time service activation fees were also not included in the model. The risk associated with accepting a long term contract with an early termination penalty was not priced into the model.

The model is conservative in that it inherently assumes that the specified “basket” of usage remains constant from one month to the next, and that the particular rate plan that is “optimum” for the given usage profile would be the least-cost plan over the full duration of the term contract. In reality, of course, usage varies, resulting in overtime charge in some months while leaving unused minutes “on the table” in other months.¹² Depending upon the nature and extent of such variation in usage, the least-price plan assumed in the model could actually differ from one month to the next. Accordingly, by assuming constant usage from month-to-month, the model is likely understating the average monthly charge over the term of the contract.

12. One US carrier, AT&T (Cingular), offers “rollover” minutes, permitting customers to apply unused minutes in months in which the full allowance had not been utilized against what would otherwise be “overtime” minutes in subsequent months. We are not aware of any such arrangement being offered by any Canadian WSP.

Appendix 2

Authors' Qualifications

Lee L. Selwyn is President and founder of Economics and Technology, Inc. He is an internationally recognized authority on telecommunications economics, regulation, and public policy. Since founding ETI in 1972, Dr. Selwyn has advised a broad range of telecom industry stakeholders – regulatory agencies, consumer advocates, large corporate telecom users, and a number of competitive local and interexchange carriers – on a variety of telecom policy issues, including technology, rate design, service cost analysis, market structure, form of regulation, affiliate transactions, universal service, access charges and intercarrier compensation, and taxation of telecommunications services. He has appeared as an expert in a number of CRTC proceedings, at the US FCC, the US Congress, and before more than forty state commissions across the US. He has served as a consultant to the CRTC on several occasions, and was an invited speaker at the Canadian Telecommunications Policy Review Forum in Ottawa in October 2005. Dr. Selwyn holds a Ph.D. in Management from the Alfred P. Sloan School of Management, Massachusetts Institute of Technology; a Master of Science in Industrial Management, MIT; and a B.A. with Honors in Economics from Queens College of the City University of New York.

Colin B. Weir, Senior Analyst, assists Senior Consulting Staff with economic research and analysis on all aspects of the telecommunications industry for ETI's clients. His experience includes work on a variety of issues, including: wireless ETF and handset locking practices; NANPA numbering policy; Universal Service policy; pricing and regulation of Unbundled Network Elements; rate-of-return regulation; pricing flexibility for special access services; and telecommunications tariff and contract pricing. Additionally, he is responsible for the maintenance of ETI's comprehensive databases of interstate and international interexchange carrier and local telephone company tariffs. During his undergraduate studies, Mr. Weir published his senior thesis "Sales Forecasting in Supermarkets: A Comparison of Econometric and Non-Econometric Methods." [B.A. *cum laude* in Business Economics, The College of Wooster] .

Economics and Technology, Inc. has been primarily and continuously engaged in the telecommunications policy field for nearly thirty-five years. ETI has participated in more than 500 regulatory and policymaking proceedings in more than forty states, at the FCC, the CRTC, and in a number of other countries. The firm has served as consultants on a broad range of policy and ratesetting issues to the CRTC, to numerous state utility commissions and state consumer advocacy agencies across the US, as well as to numerous corporate, government, consumer and competitive carrier clients.

ECONOMICS AND TECHNOLOGY, INC.

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