07 August 2009

Mr. Robert A. Morin
Secretary General
Canadian Radio-television and Telecommunications Commission
Ottawa, ON  K1A 0N2

RE : Commission File Number 8663-C12-200905995 – Call for comments - Nomadic VoIP E9-1-1 service, Telecom Notice of Consultation 2009-194 (NC 2009-194) – Submission of Quebecor Media Inc. (QMI), on behalf of Videotron Ltd. (Videotron), providing the information set out in Appendices 1 and 4 of the notice of consultation

Dear Mr. Morin,

1. In accordance with paragraphs 23 and 24 of NC 2009-194, as amended by NC 2009-194-1 and the Commission’s procedural letter of 12 May 2009, we are pleased to provide herein the information set out in Appendices 1 and 4 of the notice of consultation.

2. The information set out in Appendix 1 of the notice of consultation is provided in the enclosed document entitled Economic Evaluation of the capital and expense costs of implementing a Location Determination Platform (LDP) to support nomadic VoIP E9-1-1 service – Canadian i2 Solution with centralized Location Information Server (LIS). The information set out in Appendix 4 of the notice of consultation is set out in the enclosed document entitled Economic Evaluation of the capital and expense costs of implementing a Location Determination Platform (LDP) to support nomadic VoIP E9-1-1 service – Alternative Canadian i2 Solution with centralized Location Information Server (LIS).

3. Pursuant to section 39 of the Telecommunications Act, certain of the demand and costing information contained within the enclosed economic evaluations is being filed in confidence. This information is commercially sensitive and release of it on the public record would enable Videotron’s existing and potential competitors to better tailor their own
service offerings and marketing strategies, which would cause Videotron specific direct harm. An abridged version of the economic evaluations is being filed for the public record.

4. Trusting this is satisfactory, we remain,

Yours truly,

Dennis Béland
Director, Regulatory Affairs
Telecommunications

cc: Interested Parties to NC 2009-194

Enclosures
Economic Evaluation of
the capital and expense costs of
implementing a Location Determination Platform (LDP)
to support nomadic VoIP E9-1-1 service
-
Canadian i2 Solution with
centralized Location Information Server (LIS)

07 August 2009
# Location Determination Platform (LDP) Economic Evaluation #1

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1.0 SERVICE DESCRIPTION

At paragraph 24 of Telecom Decision 2007-125, CRTC Interconnection Steering Committee – Non-consensus report on a functional architecture for implementation of nomadic VoIP E9-1-1 service in Canada (Decision 2007-125), the Commission directed Cogeco Cable Inc., MTS Allstream Inc., Rogers Cable Inc., Shaw Communications Inc., and Videotron Ltd. (collectively, the large Access Service Providers or ASPs) to file an economic evaluation of the capital and expense costs to build and manage a Local Information Server (LIS) and supporting Location Determination Platform (LDP) for their respective high-speed Internet customers. The Commission further directed that the economic evaluation be based on the proposed “Canadian i2 Solution” of Bell Aliant Regional Communications, Limited Partnership, Bell Canada, Saskatchewan Telecommunications, and TELUS Communications Company (collectively, Bell et al) set out in non-consensus report ESRE0044 of the Emergency Services Working Group (ESWG) of the CRTC Interconnection Steering Committee (CISC).

An LDP helps to identify a nomadic VoIP 9-1-1 caller’s location by linking the caller’s Internet Protocol (IP) address with the civic address of the high-speed Internet access used to obtain VoIP service. An LIS is a database of customer location information. Under the proposed Canadian i2 Solution, an ASP would constantly update an LIS with the location information generated by its LDP. Information transfer protocols between the LIS and the 9-1-1 call routing infrastructure of the local Emergency Service Provider (ESP, which is also the Incumbent Local Exchange Carrier, or ILEC) would ensure this location information is made available to the applicable Public Safety Answering Point (PSAP) at the time of a nomadic VoIP 9-1-1 call.

In Telecom Notice of Consultation 2009-194, Call for comments – Nomadic VoIP E9-1-1 service (NC 2009-194), the Commission acknowledged that, were the Canadian i2 Solution to be adopted, implementation of a centralized LIS hosted by the ILEC would be the most cost-efficient approach. The Commission also found that the LDP cost estimates submitted by ASPs pursuant to Decision 2007-125 were unsatisfactory as a basis upon which to support even a rough estimate of the LDP costs. Moreover, the Commission found that to the extent they do represent the actual LDP costs, the LDP cost estimates may call into question the economic viability and administrative feasibility of the proposed Canadian i2 Solution. As a result, the Commission undertook to elicit better LDP cost estimates for the proposed Canadian i2 Solution and to consider alternative approaches to the provision of nomadic VoIP E9-1-1 service.
The current economic evaluation responds to the Commission’s request for a better LDP cost estimate for the proposed Canadian i2 Solution (with centralized LIS at the ILEC). A separate economic evaluation filed in parallel with the current one responds to the Commission’s request for alternative approaches to the provision of nomadic VoIP E9-1-1 service.

We note that Videotron has no experience constructing and integrating an LDP, nor any experience interconnecting such a platform to an external LIS. Furthermore, to Videotron’s knowledge, the proposed Canadian i2 Solution has not been deployed anywhere in the world nor is it being contemplated for deployment anywhere in the world. For these reasons, despite our best efforts, this economic evaluation must be regarded as an estimate, potentially subject to significant revision as the detailed scope of process, development and integration work becomes clearer.

1.1 Purpose of Service

The purpose of this service is to assist in automatically transmitting to an applicable PSAP, through the network of the local ESP, the recorded civic address of a Videotron high-speed Internet end-customer, where a 9-1-1 call has been initiated through a nomadic VoIP service operating over that end-customer’s high-speed Internet service.

1.2 Service Benefits and Characteristics

This service assists a PSAP operator in ascertaining the calling location of a nomadic VoIP 9-1-1 caller, with the ultimate objective of improving emergency response. As such, it enables nomadic VoIP service providers to improve the quality of the 9-1-1 service they offer to their end-customers.

2.0 MARKETING CONSIDERATIONS

2.1 Target Market

The target market for this service is the community of nomadic VoIP service providers operating in Canada, who require this service in order to improve the quality of the 9-1-1 service they provide to their end-customers.
2.2 **Price Positioning**

Videotron submits that the community of nomadic VoIP service providers should be required to defray the entirety of Videotron’s capital costs (with mark-up) up-front and the entirety of Videotron’s operating costs (with mark-up) as they are incurred.

Nevertheless, at paragraph (d) of Appendix 1 of NC 2009-194, the Commission has directed each ASP to provide the expected rate impact of a requirement that the LDP costs be recovered over (i) each ASP’s respective high-speed Internet client base; (ii) all Canadian nomadic VoIP users; (iii) all Canadian E9-1-1 users; and (iv) all Canadian E9-1-1 users excluding wireless subscribers.

Videotron’s response to part (i) above is based on the demand information provided at section 4.2 herein. The resulting rate impact is:

\[ \$0.12 \text{ per Videotron high-speed Internet end-customer per month} \]

Videotron does not possess actual or forecasted demand estimates for all Canadian VoIP users, all Canadian E9-1-1 users, or all Canadian E9-1-1 users excluding wireless subscribers, and therefore is not in a position to respond to paragraphs (d)(ii), (d)(iii) or (d)(iv) of Appendix 1 of NC 2009-194. In any event, a full response to each of these questions requires a summation of all ASP costs, which only the Commission will be in a position to compile.

2.3 **Future Plans**

Videotron has no future plans with regard to this service. Videotron notes that this service will be rendered obsolete well before the end of the seven-year study period due to the expected transition to i3 9-1-1 call routing systems in North America.

3.0 **TARIFF CONSIDERATIONS**

For this economic evaluation, Videotron has employed a minimal mark-up of 15%.
4.0 ECONOMIC EVALUATION

4.1 General Considerations

4.1.1 Study Assumptions
Videotron has not developed a Variable Common Cost Factor.

4.1.2 Study Period
The study period for this economic evaluation is 7 years, from 01 January 2010 to 31 December 2016.

4.1.3 Economic Parameters and Tax Rates
The economic parameters and tax rates used in this economic evaluation are as follows:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>WACC (after tax)</td>
<td>###</td>
</tr>
<tr>
<td>% Debt</td>
<td>###</td>
</tr>
<tr>
<td>Cost of Debt</td>
<td>###</td>
</tr>
<tr>
<td>Cost of Equity</td>
<td>13 %</td>
</tr>
<tr>
<td>Tax Rate</td>
<td>###</td>
</tr>
</tbody>
</table>

4.2 Demand Information

Videotron reiterates its position that the community of nomadic VoIP service providers should be required to defray the entirety of Videotron’s capital costs (with mark-up) up-front and the entirety of Videotron’s operating costs (with mark-up) as they are incurred.

Nevertheless, for the purpose of responding to paragraph (d)(i) of Appendix 1 of NC 2009-194, Videotron’s demand estimate for its high-speed Internet end-customer base is as follows. This demand estimate does not include the end-customers of Videotron’s Third Party Internet Access (TPIA) customers, who are expected to deploy their own LDPs.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of End-Users (‘000s)</td>
<td>###</td>
<td>###</td>
<td>###</td>
<td>###</td>
<td>###</td>
<td>###</td>
<td>###</td>
<td>###</td>
</tr>
</tbody>
</table>
4.3 Phase II Costs

The Canadian i2 Solution, as it is understood by Videotron, is depicted in the attached Figure 1. Consistent with the Commission’s direction in NC 2009-194, a centralized LIS is hosted by the ESP. Videotron’s network coverage area includes the territories of two ILEC ESPs – Bell Canada (including its affiliates Bell Aliant and Telebec) and TELUS-Quebec, which implies two LISs with which Videotron must interconnect.

Under this model, each LIS would contain the ASP end-customer IP, Media Access Control (MAC) and civic addresses for its coverage territory. The role of each ASP’s LDP would be to update the LIS whenever its end-customers change IP address. In Videotron’s case, this would occur whenever a Dynamic Host Configuration Protocol (DHCP) server identifies an IP address change for an end-customer. Updated information would be pushed to the LIS in near real time.

The 9-1-1 call flow would be as follows:

1. A VoIP End Point (VEP) initiates a 9-1-1 call by way of a Multimedia Terminal Adapter (MTA) attached to the Videotron high-speed network.
2. The VoIP service provider’s (VSP’s) Call Server routes the call to the ILEC’s Stage 1 Router.
3. The ILEC’s Stage 1 Router queries the LIS with the VEP’s IP address.
4. The LIS returns the corresponding civic address to the ILEC’s Stage 1 Router.
5. The ILEC’s Stage 1 Router returns the appropriate Stage 2 Router to the VSP’s Call Server.
6. The VSP’s Call Server routes the 9-1-1 call to the appropriate Stage 2 Router.
7. The ILEC’s Stage 2 Router routes the call to the appropriate PSAP.

The following economic evaluation does not include any of the costs that must be incurred by ESPs to construct LISs, to receive interconnection by ASPs, or otherwise to bring their emergency service platforms into conformity with the Canadian i2 Solution.

The following economic evaluation includes only the costs that would be incurred to make Videotron’s hybrid optical fibre / coaxial cable network compliant with the Canadian i2 Solution. No assessment has been made of the feasibility or cost of making Videotron’s fibre-based MultiProtocol Label Switching (MPLS) network compliant with the Canadian i2 Solution.

For the purposes of this economic evaluation, Videotron assumes that each of its Third Party Internet Access (TPIA) customers builds and operates its own LDP.
Videotron’s LDP has been sized to accommodate projected growth in Videotron’s high-speed Internet customer base.

Videotron notes that on a clarification conference call held between ASPs and ESPs on 22 February 2008, it was established that there would be no requirement to deploy the “v7” interface between the ESP’s Validation DataBase (VDB) and the ASP’s back-office systems, which had originally been included in ESWG non-consensus report ESRE0044. Rather, address validation will be performed by means of a notification process between ESPs and ASPs. As a result, this economic evaluation excludes provision of the v7 interface.

Videotron notes that it expects to migrate its IP network from IP version 4 (IPv4) to IP version 6 (IPv6) in the medium term. This migration may result in the need to reconstruct several of the interfaces and support systems that form part of this economic evaluation. Videotron reserves the right to submit a revised economic evaluation at the time of any such migration.

Capital causal to service includes LDP, System Interconnection, Network and System Engineering, Network System Upgrades Required for Deployment, Support Systems and Network Security, Back Office Systems Development, and Business Agreements. With the exception of the fibre-based interconnections, these items have an estimated life of five years, which implies capital reinvestment two years prior to the end of the seven-year study period. The fibre-based interconnections have an estimated life of ten years.


Details for each category of capital costs causal to the LDP service are provided below:

**LDP:** This capital expenditure category includes the capital costs associated with the acquisition, installation, integration and configuration of the hardware and software required for an LDP server deployed in geo-diversity. Acquisition of an LDP laboratory server is also included.

**System Interconnection:** This capital expenditure category includes the capital costs associated with diverse fibre interconnections (fibre equipment and routers) to Bell Canada and TELUS-Quebec, the two ESPs in Videotron’s serving territory. Acquisition of laboratory equipment is also included.
**Network and System Engineering:** This capital expenditure category includes the capital costs associated with overall program management as well as the network engineering activities required to configure and integrate the LDP with internal and external (LIS) systems.

**Network and System Upgrades Required for Deployment:** This capital expenditure category includes the capital costs associated with the acquisition, installation, integration and configuration of two new Domain Name System (DNS) server pairs. The role of these servers is to associate MAC addresses with IP addresses and to transfer the associations to the LDP.

**Support Systems and Network Security:** This capital expenditure category includes the capital costs associated with enhancements to various components of the Network Management System (NMS), including system administration, database administration, operational support systems and geomatics. The purpose of these enhancements is to associate civic addresses with MAC addresses and to transfer the associations to the LDP.

**Back Office Systems Development:** This capital expenditure category includes the capital costs associated with the development and execution of regression testing, acceptance testing, and service launch plans for a variety of back office systems affected by the LDP deployment.

**Business Agreements:** This capital expenditure category includes the capital costs associated with the establishment of service level agreements with the ESPs.

Details for each category of expenses causal to the LDP service are provided below:

**LDP:** This expense category includes the ongoing cost of maintaining the LDP hardware and software.

**Network and System Engineering:** This expense category includes the ongoing cost of maintaining the configuration and integration of the LDP with internal and external (LIS) systems.

**Network and System Upgrades Required for Deployment:** This expense category includes the ongoing cost of maintaining the two new DNS server pairs.

**Support Systems and Network Security:** This expense category includes the ongoing cost of maintaining the enhancements to various components of the NMS.
Back Office Systems Development: This capital expenditure category includes the ongoing cost of regression and acceptance testing for a variety of back office systems affected by the LDP deployment.

Network and System Management: This expense category reflects the costs of ongoing monitoring and trouble shooting.

The Phase II costs impacts for LDP implementation are provided in Table 1.

For each of the cost components identified in this economic evaluation, Videotron has estimated the cost for implementation in Videotron’s own high-speed network. Engineering resources at Videotron were not available to assess the scalability of these components to other ASPs, who in any event are in a better position to assess their own costs of implementation.

Regarding the potential for sharing of LDP cost components among ASPs, Videotron does not consider that any of the costs included herein could be shared in any meaningful way.
Table 1
Summary of Revenue and Cost Impacts
LDP Economic Evaluation #1 – Canadian i2 Solution

<table>
<thead>
<tr>
<th></th>
<th>Present Worth in Study Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present Worth of Revenues</td>
<td>$ 9,419,492</td>
</tr>
<tr>
<td><strong>Total Cost Impacts (PWACs):</strong></td>
<td>$ 8,190,862</td>
</tr>
<tr>
<td>Expenses causal to the service</td>
<td>###</td>
</tr>
<tr>
<td>LDP</td>
<td>###</td>
</tr>
<tr>
<td>Network and System Engineering</td>
<td>###</td>
</tr>
<tr>
<td>Network and System Upgrades Required for Deployment</td>
<td>###</td>
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<td>Support Systems and Network Security</td>
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<td>###</td>
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<td>Network and System Management</td>
<td>###</td>
</tr>
<tr>
<td>Capital causal to the service</td>
<td>###</td>
</tr>
<tr>
<td>LDP</td>
<td>###</td>
</tr>
<tr>
<td>System Interconnection</td>
<td>###</td>
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<td>Network and System Engineering</td>
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<tr>
<td>Network and System Upgrades Required for Deployment</td>
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<td>###</td>
</tr>
<tr>
<td>Business Agreements</td>
<td>###</td>
</tr>
<tr>
<td>Expenses causal to demand</td>
<td>$ 0</td>
</tr>
<tr>
<td>Capital causal to demand</td>
<td>$ 0</td>
</tr>
<tr>
<td>Income Taxes</td>
<td>###</td>
</tr>
<tr>
<td>Present Worth of Terminal Value</td>
<td>###</td>
</tr>
<tr>
<td>Present Worth of Demand</td>
<td>###</td>
</tr>
</tbody>
</table>

1 Numbers may not add up due to rounding.
Figure 1
Canadian i2 Solution
Economic Evaluation of the capital and expense costs of implementing a Location Determination Platform (LDP) to support nomadic VoIP E9-1-1 service - Alternative Canadian i2 Solution with centralized Location Information Server (LIS)
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1.0 SERVICE DESCRIPTION

At paragraph 24 of Telecom Decision 2007-125, CRTC Interconnection Steering Committee – Non-consensus report on a functional architecture for implementation of nomadic VoIP E9-1-1 service in Canada (Decision 2007-125), the Commission directed Cogeco Cable Inc., MTS Allstream Inc., Rogers Cable Inc., Shaw Communications Inc., and Videotron Ltd. (collectively, the large Access Service Providers or ASPs) to file an economic evaluation of the capital and expense costs to build and manage a Local Information Server (LIS) and supporting Location Determination Platform (LDP) for their respective high-speed Internet customers. The Commission further directed that the economic evaluation be based on the proposed “Canadian i2 Solution” of Bell Aliant Regional Communications, Limited Partnership, Bell Canada, Saskatchewan Telecommunications, and TELUS Communications Company (collectively, Bell et al) set out in non-consensus report ESRe0044 of the Emergency Services Working Group (ESWG) of the CRTC Interconnection Steering Committee (CISC).

An LDP helps to identify a nomadic VoIP 9-1-1 caller’s location by linking the caller’s Internet Protocol (IP) address with the civic address of the high-speed Internet access used to obtain VoIP service. An LIS is a database of customer location information. Under the proposed Canadian i2 Solution, an ASP would constantly update an LIS with the location information generated by its LDP. Information transfer protocols between the LIS and the 9-1-1 call routing infrastructure of the local Emergency Service Provider (ESP, which is also the Incumbent Local Exchange Carrier, or ILEC) would ensure this location information is made available to the applicable Public Safety Answering Point (PSAP) at the time of a nomadic VoIP 9-1-1 call.

In Telecom Notice of Consultation 2009-194, Call for comments – Nomadic VoIP E9-1-1 service (NC 2009-194), the Commission acknowledged that, were the Canadian i2 Solution to be adopted, implementation of a centralized LIS hosted by the ILEC would be the most cost-efficient approach. The Commission also found that the LDP cost estimates submitted by ASPs pursuant to Decision 2007-125 were unsatisfactory as a basis upon which to support even a rough estimate of the LDP costs. Moreover, the Commission found that to the extent they do represent the actual LDP costs, the LDP cost estimates may call into question the economic viability and administrative feasibility of the proposed Canadian i2 Solution. As a result, the Commission undertook to elicit better LDP cost estimates for the proposed Canadian i2 Solution and to consider alternative approaches to the provision of nomadic VoIP E9-1-1 service.
The current economic evaluation responds to the Commission’s request for alternative approaches to the provision of nomadic VoIP E9-1-1 service. A separate economic evaluation filed in parallel with the current one responds to the Commission’s request for a better LDP cost estimate for the proposed Canadian i2 Solution (with centralized LIS at the ILEC).

The alternative approach defined herein will be referred to as the Alternative Canadian i2 Solution. The principal advantage of the Alternative Canadian i2 Solution relative to the Canadian i2 Solution is that it eliminates the need for the ASP LDP to be continually populating an external LIS. This allows for a substantial reduction in server capacity and bandwidth. No changes would be required to PSAP equipment, processes or procedures.

We note that Videotron has no experience constructing and integrating an LDP, nor any experience interconnecting such a platform to an external LIS. Furthermore, to Videotron’s knowledge, the proposed Canadian i2 Solution has not been deployed anywhere in the world nor is it being contemplated for deployment anywhere in the world. For these reasons, despite our best efforts, this economic evaluation must be regarded as an estimate, potentially subject to significant revision as the detailed scope of process, development and integration work becomes clearer.

1.1 Purpose of Service

The purpose of this service is to assist in automatically transmitting to an applicable PSAP, through the network of the local ESP, the recorded civic address of a Videotron high-speed Internet end-customer, where a 9-1-1 call has been initiated through a nomadic VoIP service operating over that end-customer’s high-speed Internet service.

1.2 Service Benefits and Characteristics

This service assists a PSAP operator in ascertaining the calling location of a nomadic VoIP 9-1-1 caller, with the ultimate objective of improving emergency response. As such, it enables nomadic VoIP service providers to improve the quality of the 9-1-1 service they offer to their end-customers.
2.0 MARKETING CONSIDERATIONS

2.1 Target Market

The target market for this service is the community of nomadic VoIP service providers operating in Canada, who require this service in order to improve the quality of the 9-1-1 service they provide to their end-customers.

2.2 Price Positioning

Videotron submits that the community of nomadic VoIP service providers should be required to defray the entirety of Videotron’s capital costs (with mark-up) up-front and the entirety of Videotron’s operating costs (with mark-up) as they are incurred.

Nevertheless, at paragraph (d) of Appendix 1 of NC 2009-194, the Commission has directed each ASP to provide the expected rate impact of a requirement that the LDP costs be recovered over (i) each ASP’s respective high-speed Internet client base; (ii) all Canadian nomadic VoIP users; (iii) all Canadian E9-1-1 users; and (iv) all Canadian E9-1-1 users excluding wireless subscribers.

Videotron’s response to part (i) above is based on the demand information provided at section 4.2 herein. The resulting rate impact is:

$0.09 per Videotron high-speed Internet end-customer per month

Videotron does not possess actual or forecasted demand estimates for all Canadian VoIP users, all Canadian E9-1-1 users, or all Canadian E9-1-1 users excluding wireless subscribers, and therefore is not in a position to respond to paragraphs (d)(ii), (d)(iii) or (d)(iv) of Appendix 1. In any event, a full response to each of these questions requires a summation of all ASP costs, which only the Commission will be in a position to compile.

2.3 Future Plans

Videotron has no future plans with regard to this service. Videotron notes that this service will be rendered obsolete well before the end of the seven-year study period due to the expected transition to i3 9-1-1 call routing systems in North America.
3.0 TARIFF CONSIDERATIONS

For this economic evaluation, Videotron has employed a minimal mark-up of 15%.

4.0 ECONOMIC EVALUATION

4.1 General Considerations

4.1.1 Study Assumptions
Videotron has not developed a Variable Common Cost Factor.

4.1.2 Study Period
The study period for this economic evaluation is 7 years, from 01 January 2010 to 31 December 2016.

4.1.3 Economic Parameters and Tax Rates
The economic parameters and tax rates used in this economic evaluation are as follows:

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<td>13 %</td>
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<td>Tax Rate</td>
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4.2 Demand Information

Videotron reiterates its position that the community of nomadic VoIP service providers should be required to defray the entirety of Videotron’s capital costs (with mark-up) up-front and the entirety of Videotron’s operating costs (with mark-up) as they are incurred.

Nevertheless, for the purpose of responding to paragraph (d)(i) of Appendix 1 of NC 2009-194, Videotron’s demand estimate for its high-speed Internet end-customer base is as follows. This demand estimate does not include the end-customers of Videotron’s Third Party Internet Access (TPIA) customers, who are expected to deploy their own LDPs.
4.3 Phase II Costs

The Alternative Canadian i2 Solution, as proposed herein, is depicted in the attached Figure 1. Consistent with the Commission’s direction in NC 2009-194, a centralized LIS is hosted by the ESP. Videotron’s network coverage area includes the territories of two ILEC ESPs – Bell Canada (including its affiliates Bell Aliant and Telebec) and TELUS-Quebec, which implies two LISs with which Videotron must interconnect.

Under this model, each LIS would perform a query to the ASP LDP in order to obtain the civic address associated with the IP address of a nomadic VoIP device that has placed a 9-1-1 call. The role of each ASP’s LDP would be to house a continuously updated database of IP to civic address associations, or alternatively to determine the civic address associated with a given IP address upon reception of a query from the LIS. Query responses would be provided to the LIS in real time.

The 9-1-1 call flow would be as follows:

1. A VoIP End Point (VEP) initiates a 9-1-1 call by way of a Multimedia Terminal Adapter (MTA) attached to the Videotron high-speed network.
2. The VoIP service provider’s (VSP’s) Call Server routes the call to the ILEC’s Stage 1 Router.
3. The ILEC’s Stage 1 Router queries the LIS with the VEP’s IP address.
4. The LIS queries the ASP’s LDP with the VEP’s IP address.
5. The ASP’s LDP returns the corresponding civic address to the LIS.
6. The LIS returns the civic address to the ILEC’s Stage 1 Router.
7. The ILEC’s Stage 1 Router returns the appropriate Stage 2 Router to the VSP’s Call Server.
8. The VSP’s Call Server routes the 9-1-1 call to the appropriate Stage 2 Router.
9. The ILEC’s Stage 2 Router routes the call to the appropriate PSAP.

The following economic evaluation does not include any of the costs that must be incurred by ESPs to construct LISs, to receive interconnection by ASPs, or otherwise to bring their emergency service platforms into conformity with the Alternative Canadian i2 Solution.
The following economic evaluation includes only the costs that would be incurred to make Videotron’s hybrid optical fibre / coaxial cable network compliant with the Canadian i2 Solution. No assessment has been made of the feasibility or cost of making Videotron’s fibre-based MultiProtocol Label Switching (MPLS) network compliant with the Alternative Canadian i2 Solution.

For the purposes of this economic evaluation, Videotron assumes that each of its Third Party Internet Access (TPIA) customers builds and operates its own LDP.

Videotron’s LDP has been sized to accommodate projected growth in Videotron’s high-speed Internet customer base.

Videotron notes that on a clarification conference call held between ASPs and ESPs on 22 February 2008, it was established that there would be no requirement to deploy the “v7” interface between the ESP’s Validation DataBase (VDB) and the ASP’s back-office systems, which had originally been included in ESWG non-consensus report ESRE0044. Rather, address validation will be performed by means of a notification process between ESPs and ASPs. As a result, this economic evaluation excludes provision of the v7 interface.

Videotron notes that it expects to migrate its IP network from IP version 4 (IPv4) to IP version 6 (IPv6) in the medium term. This migration may result in the need to reconstruct several of the interfaces and support systems that form part of this economic evaluation. Videotron reserves the right to submit a revised economic evaluation at the time of any such migration.

Capital causal to service includes LDP, System Interconnection, Network and System Engineering, Network System Upgrades Required for Deployment, Support Systems and Network Security, Back Office Systems Development, and Business Agreements. With the exception of the fibre-based interconnections, these items have an estimated life of five years, which implies capital reinvestment two years prior to the end of the seven-year study period. The fibre-based interconnections have an estimated life of ten years.


Details for each category of capital costs causal to the LDP service are provided below:
**LDP**: This capital expenditure category includes the capital costs associated with the acquisition, installation, integration and configuration of the hardware and software required for an LDP server deployed in geo-diversity. Acquisition of an LDP laboratory server is also included.

**System Interconnection**: This capital expenditure category includes the capital costs associated with diverse fibre interconnections (fibre equipment and routers) to Bell Canada and TELUS-Quebec, the two ESPs in Videotron’s serving territory. Acquisition of laboratory equipment is also included.

**Network and System Engineering**: This capital expenditure category includes the capital costs associated with overall program management as well as the network engineering activities required to configure and integrate the LDP with internal and external (LIS) systems.

**Network and System Upgrades Required for Deployment**: This capital expenditure category includes the capital costs associated with the acquisition, installation, integration and configuration of two new Domain Name System (DNS) server pairs. The role of these servers is to associate MAC addresses with IP addresses and to transfer the associations to the LDP.

**Support Systems and Network Security**: This capital expenditure category includes the capital costs associated with enhancements to various components of the Network Management System (NMS), including system administration, database administration, operational support systems and geomatics. The purpose of these enhancements is to associate civic addresses with MAC addresses and to transfer the associations to the LDP.

**Back Office Systems Development**: This capital expenditure category includes the capital costs associated with the development and execution of regression testing, acceptance testing, and service launch plans for a variety of back office systems affected by the LDP deployment.

**Business Agreements**: This capital expenditure category includes the capital costs associated with the establishment of service level agreements with the ESPs.

Details for each category of expenses causal to the LDP service are provided below:

**LDP**: This expense category includes the ongoing cost of maintaining the LDP hardware and software.
Network and System Engineering: This expense category includes the ongoing cost of maintaining the configuration and integration of the LDP with internal and external (LIS) systems.

Network and System Upgrades Required for Deployment: This expense category includes the ongoing cost of maintaining the two new DNS server pairs.

Support Systems and Network Security: This expense category includes the ongoing cost of maintaining the enhancements to various components of the NMS.

Back Office Systems Development: This capital expenditure category includes the ongoing cost of regression and acceptance testing for a variety of back office systems affected by the LDP deployment.

Network and System Management: This expense category reflects the costs of ongoing monitoring and trouble shooting.

The Phase II costs impacts for LDP implementation are provided in Table 1.

For each of the cost components identified in this economic evaluation, Videotron has estimated the cost for implementation in Videotron’s own high-speed network. Engineering resources at Videotron were not available to assess the scalability of these components to other ASPs, who in any event are in a better position to assess their own costs of implementation.

Regarding the potential for sharing of LDP cost components among ASPs, Videotron does not consider that any of the costs included herein could be shared in any meaningful way.
### Table 1
Summary of Revenue and Cost Impacts\(^1\)
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<table>
<thead>
<tr>
<th>Present Worth in Study Period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Present Worth of Revenues</strong></td>
</tr>
<tr>
<td><strong>Total Cost Impacts (PWACs):</strong></td>
</tr>
<tr>
<td><strong>Expenses causal to the service</strong></td>
</tr>
<tr>
<td>LDP</td>
</tr>
<tr>
<td>Network and System Engineering</td>
</tr>
<tr>
<td>Network and System Upgrades Required for Deployment</td>
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<tr>
<td>Support Systems and Network Security</td>
</tr>
<tr>
<td>Back Office Systems Development</td>
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<tr>
<td>Network and System Management</td>
</tr>
<tr>
<td><strong>Capital causal to the service</strong></td>
</tr>
<tr>
<td>LDP</td>
</tr>
<tr>
<td>System Interconnection</td>
</tr>
<tr>
<td>Network and System Engineering</td>
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<td>Back Office Systems Development</td>
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<tr>
<td>Business Agreements</td>
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<tr>
<td><strong>Expenses causal to demand</strong></td>
</tr>
<tr>
<td><strong>Capital causal to demand</strong></td>
</tr>
<tr>
<td><strong>Income Taxes</strong></td>
</tr>
<tr>
<td><strong>Present Worth of Terminal Value</strong></td>
</tr>
<tr>
<td><strong>Present Worth of Demand</strong></td>
</tr>
</tbody>
</table>

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\(^1\) Numbers may not add up due to rounding.
Figure 1
Alternative Canadian i2 Solution
*** end of document ***