

A large, light beige graphic consisting of several overlapping, rounded rectangular shapes and lines, resembling a stylized arrow or a network path, is centered on the page behind the title text.

# Rural High Speed Packet Access (HSPA) Networks

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### **3. TELUS Mobile Internet Plans**

TELUS is currently offering the following HSPA based mobile Internet plans:

1. \$30/month 500 MB
2. \$35/month 1GB
3. \$50/month 2GB
4. \$65/month 3GB
5. \$85/month 5GB

Additional Data: \$.05/MB

### **4. Economic Analysis**

This economic analysis has three parts:

- 4.1 Average Household Broadband Usage
- 4.2 Internet Service Provider's Broadband Rate Plans
- 4.3 Rural Broadband Subscribers

#### **4.1 Average Household Broadband Usage**

The average household broadband usage will impact the total cost for subscribing to an Internet Service Provider's broadband service.

Cisco Systems conducted a study in October 2009 on the average household broadband usage. Cisco gathered usage information from 20 ISPs worldwide. The study shows that households worldwide consume about 11.4 GB of data per month or 375 MB per day using their residential broadband connections, with most of that usage occurring during the peak hours of 9:00pm through 1:00am.

1 GB of usage equals:

- 70,000 e-mails
- 1,344 hours of Web surfing
- 569 photos
- 277 music files
- 7 hours of low-resolution video (average YouTube resolution)
- 3 hours of standard definition streaming video
- 45 minutes of high-definition streaming video

Source: Time Warner Cable

## 4.2 Internet Service Provider's Broadband Rate Plans

Most resident subscribers can choose from a number different broadband providers including: Mobile Wireless, Fixed Wireless (Wireless Internet Service Provider), Digital Subscriber Loop (DSL), Cable, and Satellite. Each provider has different rate plans designed to allow the subscribers to choose a plan that best meets their requirements. For the purposes of this analysis we have used the provider's basic rate plans.

### Service Provider's Basic Rate Plans

Provider	Service	Cost	Down	Up	Usage	Additional
TELUS	HSPA	\$30	4Mbps	2Mbps	500MB	\$.05/MB
	High Speed Lite	\$25	256Kbps	128Kbps	10GB	\$5.00/GB
Rogers	HSPA	\$35	4Mbps	2Mbps	500MB	>500MB (\$5.00)
	Ultra Lite	\$25	500Kbps	256Kbps	2GB	\$5.00/GB
Shaw	High Speed Lite	\$31	1Mbps	256Kbps	10GB	Note 2.
WISP <sup>1</sup>	Residential	\$50	1.5Mbps	512Kbps	10GB	Note 3.
XploreNet	Basic Lite	\$50	512Kbps	128Kbps	200MB	Note 4.

1. Information based on an average of 4 WISPs.
2. Shaw does not list additional usage rates on web site.
3. WISPs generally do not list additional usage charges.
4. XploreNet does not list additional usage charges on their web sites.

The average household broadband usage of 11.2 GB/month exceeds all of service provider's maximum usage rate of 10GB/month. To avoid usage charges most households would upgrade to the next rate plan that include increases in bandwidth and usage.

### 4.3 Rural Broadband Subscribers

Rural broadband subscribers may choose from three types of broadband providers: Mobile Wireless (HSPA), Fixed Wireless Access (WISP, and Satellite. Each subscriber will select a rural broadband provider based on four factors:

- Service Availability
- Bandwidth or Effective Throughput
- Household Usage
- Monthly Price

At first most rural subscribers will use monthly price as the deciding factor between providers but may eventually migrate to another provider based on service availability, effective throughput, and household usage.

#### 1. Service Availability

Service availability refers to the ability of the subscriber to access the network or when the network is down and not available. It is measured as a percentage.

#### Service Availability

Availability	Downtime per Year	Downtime per Month	Downtime per Week
95%	18.25 days	36 hours	8.4 hours
98%	7.30 days	14.4 hours	3.36 hours
99.5%	1.83 days	3.60 hours	50.4 minutes
99.8%	17.52 hours	86.23 minutes	20.16 minutes
99.99%	52.6 minutes	4.32 minutes	1.01 minutes
99.999%	5.26 minutes	25.9 seconds	6.05 seconds

Measuring the actual time the network is not available is difficult. Each subscriber's tolerance to service availability is unique. Some subscriber's tolerance level may be 99.8% and others it may be 99.999%.

#### 2. Bandwidth and Effective Throughput

The download and upload speeds advertised by the provider does not necessarily imply that the subscriber is guaranteed these rates. Many factors impact the actual throughput including congestion, server response time, and available bandwidth.

TELUS HSPA network has a theoretical peak download speeds of 21.6 Mbps and 5.76 Mbps upload speeds. The actual throughput may vary by device, congestion, and distance from the cell site. Typical speeds will range from 4-6 Mbps download and 2-4 Mbps upload. There are online speed test sites available. Example: <http://www.speedtest.net/>

#### 3. Household Usage

Most households do not discover their monthly usage until they have received a bill from their provider. At that time they can decide to reduce their usage or upgrade their rate plan.

#### 4. Monthly Price

Monthly price is based on the download speed, upload speeds, and usage rates.

## **5. Summary**

Rural broadband subscribers have three choices for broadband access services:

1. Wireless Internet Service Providers (WISP)
2. Satellite Providers
3. HSPA Providers (Telus, Bell, and Rogers)

There are advantages and disadvantages of each of these services.

### **5.1 Wireless Internet Service Providers (WISPs)**

#### **Advantages:**

- Fixed wireless access networks can be designed to provide high availability guarantees, and support acceptable maximum usage levels.
- Monthly pricing comparable to urban-based rates.

#### **Disadvantages:**

- Most Wireless Internet Service Providers build their networks to cover the largest geographical area possible which may impact service availability and throughput.
- Generally only available in high density populated areas.

### **5.2 Satellite Providers**

#### **Advantages:**

- Available in 100% of rural Alberta

#### **Disadvantages:**

- Satellite communication networks have challenges with latency and signal loss due to environmental conditions such as rain and heavy snow.
- May have significantly high household usage rates.
- High Cost of Customer Premises Equipment (CPE).

### **5.3 High Speed Pack Access (HSPA)**

#### **Advantages:**

- HSPA services are transported on carrier grade networks which provide a high level of service availability (99.98% and 99.999%) and throughput.
- An HSPA service is a nomadic. This provides the ability for the subscriber to carry their broadband service with them anywhere HSPA access is available. BYOB: Bring Your Own Broadband

#### **Disadvantages:**

- If a rural subscriber has significantly high household usage an HSPA based service will be significantly more expensive.
- HSPA services are not currently available everywhere in rural Alberta.

**Over time rural subscribers will demand that rural broadband networks are designed to the same high standards as urban-based networks and will choose providers that can provide a high level of service availability, constant throughput, acceptable usage rates, and lower prices.**