

Draft Decision with respect to cost analysis for Bitstream Access according to Access Options 1 and 3

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1. Introduction

This cost analysis is subsequent to the Post and Telecom Administration (hereafter PTA) Decision no. 38/2012 on Access Option 1 which is based on the PTA Decision no. 8/2008 on the designation of a company with significant market power and the imposition of obligations on the wholesale market for broadband access.

In accordance with the PTA Decision no. 38/2012, Siminn hf. (hereafter Siminn) submitted cost analysis for bitstream access according to Access Options 1 and 3. Siminn updated the cost model which was initially elaborated by Analysys Mason for the purpose of calculating prices for bitstream access, pursuant to Decision no. 7/2010 with respect to cost analysis for bitstream access.

Despite the fact that the PTA Decision no. 38/2012 deals first and foremost with Access Option 1, the PTA considers it necessary that the tariff for Access Option 3 should be reviewed at the same time, as that Access Option is based largely on the same cost basis as Access Option 1. Prior to the making of Decision no. 38/2012, service providers had only purchased bitstream access according to Access Option 3, despite the fact that the PTA Decision no. 8/2008 defined among other things access according to Access Option 1.

Neither Mila nor Siminn has submitted proposals for amendments to the existing tariff for Access Option 2 and no such connections have been in use up to this point in time. The existing tariff for Access Option 2 is partly based on the price for connecting users with DSLAM and this part will change in accordance with changes to the tariff for Access Option 1. The tariff for Access Option 2 is furthermore based on the cost of transfer through backbone networks and the PTA considers it proper that they be reviewed during the next months as parties to the market have shown interest in the Access Options in question in rural areas.

Access Option 2 lessens the need for an extensive trunk network and might create opportunities for smaller operators. Until now there has been no demand for Access Option 2, but it may turn out to be a more economical option in some areas outside the capital area than Access Option 1.

The PTA has prepared a draft market analysis for Market 5 which has gone through national consultation and will soon be sent to the EFTA Surveilance Authority (ESA) for consultation. In the draft analysis the PTA opens the possibility for Mila to withdraw Access Option 1 in areas served by Access Option 2, under certain conditions and after endorsement by PTA, as means of more economical operation and lower wholesale prices. In the market analysis PTA did not deam it necessary to maintain access obligation of Access Option 4.

The Decision of the Competition Surveillance Authority no. 6/2013 dated 26 March 2013 on settlement between Skipti hf. and the Competition Authority (hereafter named the settlement) moved the bitstream access service from Siminn to Mila ehf. (hereafter Mila) on 1 September 2013. From that time the cost analysis was the responsibility of Mila.



The PTA bases its methodology for reviewing the cost analysis that is under discussion in this document on Article 32 of the Act on Electronic Communications no. 81/2003 (hereafter Electronic Communications Act), on Regulation no. 564/2011 on bookkeeping and cost analysis in the operations of electronic communications companies, on the opinion and guidelines from BEREC from the EU Commission and from ESA¹. The Administration also takes into account the ruling of the Appellate Committee for Electronic Communications and Postal Affairs, of recognised information providers such as Bloomberg and the evaluation of domestic consultants and on information from electronic communications companies.

The PTA opened a national consultation on the preliminary draft to the Decision here under discussion on 20 December 2013 and the consultation ran until last 13 January. Comments were received from IP-fjarskipti ehf. (Tal), Gagnaveita Reykjavíkur ehf. (GR) and Fjarskipti hf. (Vodafone). Comments by stakeholders and conclusions of the national consultation can be found in Appendix II. As a result of comments received in the national consultation, the PTA received new information regarding the use of the wholesale switches for Access Option 1. It came to light that the wholesale switches had been used for services other than was specified in the initial Mila cost analysis which meant that the use of the wholesale switches was different and more extensive than was established when the consultation on the preliminary draft was opened. Mila submitted an updated cost analysis for wholesale switches where corporate connections with Siminn, connections with Siminn mobile phone transmitters and backbone connections with Siminn IP network where taken into account.

In light of the new information received in the national consultation of the preliminary draft, PTA decided to make alterations to the calculations of the drafted tariff for wholesale switches. With these changes, PTA took into account varying use of wholesale switches, both with respect to Mila customers and to service options.

The PTA opened an additional consultation limited to the new tariff for access to wholesale switches according to Access Option 1. The consultation was opened on 21 February 2014 and ran until last 11 March. The text of the additional consultation can be found in Appendix III.

Comments in the additional national consultation were received from Vodafone, Síminn, Hringiðan ehf. and Símafélagið ehf. Comments by stakeholders and conclusions of the national consultation can be found in Appendix IV.

¹ ERG Common Position – Guidelines for implementing the Commission Recommendation C (2005) 3480 on Accounting Separation & Cost Accounting Systems under the regulatory framework for electronic communications - ERG (05) 29.

COMMISSION RECOMMENDATION of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications (2005/698/EC).

IRG Principles of Implementation and Best Practice for WACC calculation – February 2007.



2. Prior Decisions by the PTA and Communications by mail

The planned Decision on cost analysis for bitstream access is based on prior PTA Decisions nos. 8/2008, 7/2010 and 38/2012.

2.1 The PTA Decision no. 8/2008

In Decision no. 8/2008 on the designation of a company with significant market power and on the imposition of obligations on the wholesale market for broadband access, obligations were imposed on Siminn for access, non-discrimination, transparency, separation of accountancy, price control and cost accounting for wholesale bitstream access.

The access obligations prescriped in Decision no. 8/2008 included access to Access Options 1 – 4 and furthermore to various types of broadband service, which include multicast and VoIP functionalities.

With the authority in Article 32 of the Electronic Communications Act the PTA imposed the obligation on Siminn to submit to the Administration for endorsement a cost related wholesale tariff for access to bitstream at various locations in the network, see Options 1-4. The prices in the tariff should be based on historic costs having taken into account analogous services that are considered to be operated in an efficient manner, and the PTA would also ensure that the tariff was proportionate to the access price for local loops. The prices should apply as average prices for the whole country.

With the Decision no. 8/2008, a preliminary Retail Minus (-35%) price control obligation was set until the cost analysis would be completed with a decision on cost related wholesale tariff for wholesale broadband access. Therefore, 35% price cut of Siminn's bitstream prices took place when the Decision was published in 2008.

The obligation was furthermore imposed on Siminn that the company keep cost accounting of those parts of electronic communications operations that were required to supply bitstream access. Cost accounting should capture, recognise, evaluate and distribute the relevant costs on services or goods in accordance with recognised rules - that is to say by causal relationship.

PTA has drafted a new market analysis for market 4 and 5, the analysis has undergone two national consultations and a decision in this respect is expected soon. According to the PTA's findings in the analysis it is necessary to maintain price control on the xDSL bitstream service provided now by Mila, including the service which is now being cost analysed.

2.2 The PTA Decision no. 7/2010 with respect to cost analysis for bitstream access

Siminn submitted a cost analysis in the beginning of 2009 for Access Options 1-4 for wholesale bitstream access. It was stated that the company Analysys Mason had made the cost



analysis for Siminn. The cost analysis was based on historic costs which were allocated to the relevant services (FAC). With PTA Decision no. 8/2008 new obligations were imposed on Siminn and several issues were raised in the process of the cost analysis. Among the subjects under consideration were differential pricing between areas, price tilt, asset valuation, lifetime, product range, IPTV, WACC and additional matters. The correspondence between the PTA and Siminn regarding these matters lasted until February 2010.With the PTA Decision no. 7/2010, dated 26 March 2010, the tariff for Access Options 1-4 was decided and this tariff was based on the above specified Siminn cost analysis with the amendments made by the PTA.

2.3 The PTA Decision no. 38/2012 on Access Option 1

The PTA Decision no. 38/2012 with respect to the dispute between Fjarskipti ehf. (Vodafone) and Siminn on the delivery of broadband (bitstream) by Option 1 which is prescribed in the PTA Decision no. 8/2008. The option in question allows for the delivery of bitstream in DSLAM or an equivalent equipment at the location where the copper local loop connects to the telephone exchange distribution frame.

The dispute concerned among other things the delivery of Access Option 1 in the Siminn² VDSL system and the price for such access. The Vodafone request required that the Access Option would include the possibility for Vodafone to set up and control virtual channels with multicast capability and quality control which would suffice to operate the Vodafone IP TV system on the Siminn (now Mila) xDSL networks. Furthermore Vodafone requested access to VoIP over Siminn xDSL networks.

According to the PTA Decision no. 38/2012, Siminn (Mila according to the settlement) was obliged to accede to Vodafone requests for Access Option 1 in xDSL, including VDSL, with multicast and VoIP capabilities at a cost oriented prices without undue delay. The Access Option in question was to include the possibility for Vodafone to set up and control virtual channels with multicast capability and quality control which would suffice to operate the Vodafone IP TV system on the Siminn (Mila) xDSL networks. Furthermore there was to be the possibility of operating the Vodafone VoIP system on the Siminn (Mila) networks in question.

In the case of VDSL, where DSLAM equipment is located in street cabinets, Siminn (Mila) is authorised for the time being to provide the access in question in equipment in telephone exchanges where such equipment is categorised as equipment analogous to DSLAM in this connection. Such a solution shall however not involve increased costs for Vodafone.

Wholesale switches should be used in all instances. When Vodafone has formally undertaken to order wholesale switches, no more than 3 months shall pass until they are formally taken into use and formal supply of the service has commenced.

² On 1 September 2013 Mila took over operation of the system.



In the Decision, it was specified that Vodafone should pay ISK 250,000 setup fee for each wholesale switch to cover the cost of installation, finishing and definition of DSLAM VLAN set up for the wholesale switch in question. In addition to this Vodafone should pay a monthly investment and operations charge to the amount of ISK 14,777 for 1 Gb/s and ISK 18,538 for 10 Gb/s. The monthly charge in question should decrease proportionately with the advent of a new party in the service in question. The above specified cost should be entirely separated from monthly access charges for xDSL service. The prices in question were temporary prices which were to apply until the PTA had endorsed the Siminn cost oriented prices. There was an obligation that transactions between Vodafone and Siminn, where the above specified temporary prices were used, were to be settled with respect to a possible difference when the final PTA Decision on the prices was available. Such settlement should be completed within a month from the time when the final PTA conclusion with respect prices was available.

According to the Decision, Siminn was obliged to submit all prices in connection with the relevant access, along with the underlying cost analysis, no later than 1 February 2013. The PTA was to review the cost analysis in question and to prescribe final prices with a Decision.

2.4 Communication by mail

Siminn submitted cost analysis on 28 January 2013.

On 28 March 2013 the PTA required that Siminn rectify its cost analysis and/or send the Administration information and explanations with respect to, among other things, the interest rate of return, investments, operating costs, distribution of costs and charges for fibre-optic in street cabinets, on the number of ports in use for POTS, VDSL, ISDN and SHDSL and on the number of free ports.

On 11 April 2013 Siminn sent replies with respect to the above specified matters along with a recalculation of the cost analysis. The following changes were made to the model:

- WACC was corrected
- Assets were moved between categories in accordance with comments from the PTA
- Setup fees were corrected
- The division between service on the basis of traffic was corrected (table: "*Activity to service elements*", see Itemisation on page 62)
- Statistics on the number of users were harmonised in the model
- Calculations on DSLAM costs per port were corrected
- The prices for fibre to street cabinets were corrected

With a letter dated 3 May 2013 the PTA requested more detailed information on the division of DSLAM costs and on the number of free VDSL ports.

In an email from 17 May 2013 Siminn replies to PTA queries regarding the division of DSLAM costs and adds to the analysis a list of free ADSL/VDSL ports.



In an e-mail dated last 31 May the PTA requested further explanations regarding the division of ports and information on the number of ports on 31 December 2012 and 30 April 2013.

An answer with explanations regarding the division of number of ports was received by email on 7 June 2013 and documents showing the number of free ports and ports in use on 31 December 2013 and 30 April 2013 were received by email on 13 June 2013.

In a letter to Siminn dated 28 June 2013 the PTA made observations on the Siminn methodology for dividing costs between VDSL and ADSL and on the manner in which the price for each port was calculated. Furthermore it was proposed that the cost analysis be updated in accordance with the Mila increase in access prices for the local loop.

On 22 August 2013 Siminn sent a recalculation of the cost analysis where the PTA observations had been taken into account. The following changes were made to the model:

- In the division of costs between VDSL and ADSL, separation according to bookkeeping accounts was used instead of the calculation rule.
- The unit price for investments in DSL ports was calculated on the basis of [...]³ of the total number of ports instead of being only related to ports that were in use.
- The setup fee for local loops was changed and is now according to the Mila tariff.
- Cost separation took into account the increase of the Mila local loop lease charge which came into force on 1 August 2013.

In an e-mail dated 29 August 2013 the PTA requested that Siminn submit real figures on costs for wholesale switches that had already been purchased and set up.

Subsequent to the Mila notification to the PTA that the company was taking over the Siminn bitstream service, the PTA sent a letter to Mila dated 30 August 2013 where the PTA required that Mila confirm the company's responsibility for the Siminn cost analysis.

A reply was received from Mila on 5 September 2013 when it was confirmed that Mila had taken over control of the cost analysis and a reservation was made on responsibility for the information based on Siminn bookkeeping documentation to which Mila did not have access.

The PTA sent a letter to Mila dated 18 September 2013 where observations were made regarding calculations for the service items *Backhaul distance* and *Core distance* in Access Option 3. Furthermore, it was requested that calculations for port costs for SHDL should be rectified.

With a letter dated 27 September 2013 Mila submitted a revised cost analysis in accordance with observations made by the PTA and additionally provided proposals for corresponding

³ Information removed for reasons of confidentiality. The same applies to information in square brackets in this document.



changes to other aspects and the proposal that prices for ADSL and VDSL be levelled. Mila also proposed a number of corrections to the cost model.

In an e-mail dated 8 October 2013 the PTA endorsed the Mila proposals and on the same day Mila submitted the final edition of the cost model for Access Options 1 and 3.

On 9 October 2013 Mila submitted cost analysis for wholesale switches.

In an e-mail dated 16 October 2013 the PTA requested further information on the wholesale switches and on the underlying criteria to the calculations of port cost. The PTA also requested correction of calculations of setup fees and more detailed information on operating costs of wholesale switches. Mila replies were received by email on 17 October 2013 and an updated cost analysis for the wholesale switches was received by the PTA on 18 October 2013.

In an e-mail dated 12 November 2013 the PTA requested explanations on salaries costs for the setting up of the wholesale switches and replies were received from Mila by email on 14 November. The PTA requested further explanations on 18 November 2013 and received an answer from Mila on the same day.

With a letter dated 26 November 2013 the PTA proposed an amendment to the Mila proposal for calculations of port equivalence in wholesale switches. Furthermore the PTA proposed a reduction in operating costs of the service agreement for wholesale switches. In an e-mail dated 5 December 2013 Mila announced that the company made no observations on the PTA proposals for amendments.

Due to the comments received in the national consultation, PTA sent an inquiry to Míla, dated 22 January 2014, regarding the use of the wholesale switches.

In Mila's reply, dated 4 February 2014, it was stated that the wholesale switches were not solely used for connections for Access Option 1, as had been presumed. There were corporate connections with Siminn, connections with Siminn mobile phone transmitters and backbone connections with Siminn IP network. The Mila reply was accompanied with an updated cost analysis for wholesale switches where corporate connections were taken into account along with other connections and a new price was calculated for ports. In an e-mail, dated 10 February 2014, Mila attached an updated information of the usage of the wholesale switches.

In an e-mail, dated 12 February 2014, the PTA informed Míla of the PTA's intention to make alteration of the tariff for wholesale switches where the setup fee would be included, partly or entirely, in the investment cost. The PTA furthermore requested information on the itemisation of the setup cost, if such information were available.

In Míla's reply the same date it came to light that an itemisation of the setup cost was not available. Mila also pointed out, with respect to PTA intention of including setup cost in the



investment cost, that the work involved in the connection and configuration for Access Option 1 were more extensive than the work involved in corporate connections.

The following Sections contain further discussion on the content of the above specified written communications as appropriate.

3. Siminn/Mila cost analysis for bitstream access according to Access Options 1 and 3

3.1 Introduction

In accordance with the PTA Decision no. 38/2012, Siminn submitted cost analysis on 28 January 2013. In the analysis, prices were calculated for ADSL and VDSL access according to Access Options 1 and 3. Furthermore, additional costs were calculated for TV service (multicast) and VoIP service. Temporary prices based on this cost analysis were published on the Siminn website (and later by Mila).

Changes were made to the cost analysis subsequent to observations by the PTA as is further detailed here below and this discussion is based on the newest edition of the cost model which was received by the PTA on 8 October 2013.

Figure 3.1. show us how Access Options 1 and 3 are connected to the Mila electronic communications network⁴.





Option 1

The Seller installs an xDSL connection at the user side and delivers Bitstream to the purchasers on the other side of the DSLAM. The purchasers are responsible for the trunk line connection from DSLAM through ATM and/or IP networks to service station. This means that purchasers have more control over quality of the service they sell but this requires on the other hand significant investment on their part.

Option 3

⁴ According to the settlement Mila shall have access to Siminn's IP/MPLS network, necessary for the provision of xDSL and GPON services, until Mila has built its own network for the provision of xDSL and GPON services. Mila shall be able to provide bitstream service over its own network within one year.



Bitstream is delivered to the purchaser after transmission through the IP network operated by the Seller which also operates DSLAM and is responsible for the quality of the service while the purchaser may possibly negotiate on varying quality for his customers.

In Section 7 here below there is a description of how costs are divided between the varying service elements that belong to Access Options 1 and 3.

3.2 In general on the Siminn/Mila cost analysis

The Siminn cost analysis (Mila) is partly based on the Analysys Mason cost model for bitstream access from 2009.

Siminn (Mila) cost analysis for bitstream access according to Access Options 1 and 3 is based on the following main criteria:

- 1. The model is based on historical costs using the tilted annuity depreciation method for the purpose of calculating the annual charge (capital cost). The price tilt is the same for all investments, [...].
- 2. The model includes real rate of return which is based on weighted average cost of capital (WACC real) on capital that is tied in assets in connection with provision of service in accordance with PTA's conclusion.
- 3. The investments are based on the Siminn asset system (FAR_SAP October 2012).
- 4. The analysis is based on an estimation of Gross Replacement Cost, GRC. The lifetime of the equipment is based on the bookkeeping lifetime of assets in the Siminn asset system. Siminn however re-evaluated the lifetime of the DSL system and IP/MPLS and uses the same reference as in the previous cost analysis for bitstream access:
 - DSL system = [...]
 - IP/MPLS network = [...]
- 5. Historical cost is allocated to specific service (FAC).
- 6. Operating costs come from the Siminn [...] bookkeeping system where operating costs are entered by accounts. Operational figures for the first nine months of 2012 are used and are projected for the whole year on this basis.
- 7. Operating costs derived from services purchased from Mila are calculated on the basis of unit prices according to the Mila tariff and number of users on 1 October 2012.
- 8. The figures for the number of customers are based on data from 31 December 2012.
- 9. Average prices for DSL service for Access Options 1 and 3 are calculated.

Cost analysis also involves calculation of costs for TV service and for VoIP. Siminn (Mila) also submitted a special cost analysis for wholesale switches, see details in Section 8.



4. Weighted Average Cost of Capital

In Article 16 of Regulation no. 564/2011 on accounting and cost analysis in the operations of electronic communications companies, it is stated that the costs of initial capital bound in assets that are used in connection with the provision of service or service goods shall be calculated. The rate of return shall be based on weighted average cost of capital (WACC) which is calculated from the required rate of return on equity and the required rate of return on debts in accordance with Regulation no. 564/2011. The CAPM model (Capital Asset Pricing Model) shall be used when calculating the rate of return on capital assets and the rate shall reflect the time value of money and the risk related to operations on the market in question. A more detailed description of calculations of the WACC and of rate of return on equity can be found in an Appendix to Regulation no. 564/2011.

The required rate of return on debt shall be calculated as the sum of risk-free interest and risk premium, which reflects normal mark-up for companies on the market. The PTA shall decide the WACC at least once a year based on market risk premium, economic gearing and the position with respect to working capital and debts.

The PTA evaluation of the WACC (WACC real) for Siminn is 8.00% for the year 2012 in calculations of rate of return for the capital that is tied in assets used in connection with the company's provision of services. The position with respect to working capital and debts is not taken into account in the PTA calculations in this instance.

In the Siminn analysis from 28 January 2013 a WACC of [...]% was used.

With a letter dated 20 March 2013 PTA made observations on the Siminn WACC:

"The PTA has calculated WACC for 2012. [...]"



WACC	2012
Risk-free rate	3,48%
Unlevered beta	0,50
Levered beta	0,72
Debts/equity	0,54
Market risk premium	5,00%
Cost of equity	7,06%
Risk-free rate	3,48%
Debt premium	3,00%
Cost of debt	6,48%
Debt %	35%
Equity %	65%
Corporate tax rate	20%
Cost of dept, post-tax	5,18%
Cost of equity, post-tax	8,82%
WACC (pre-tax)	8,00%

In the recalculation of the cost analysis submitted by Siminn on 11 April 2013, Siminn took the PTA observations into account and based the calculations on a 8.0% rate of return on equity and debts (WACC).



5. Investments base and lifetime

5.1 Siminn/Mila analysis

In the cost analysis, Siminn (Mila) used historical cost as the basis for its evaluation of replacement cost or repurchase price of assets.

When evaluating capital expenditure (capex) in cost analysis of bitstream access, Siminn used the following methodology:

When deciding the lifetime of assets the lifetime of assets as registered in the Siminn asset system, FAR, was used, with however a number of exceptions. Siminn proposed the following amendments to lifetime from that which was registered in FAR:

[...]

Subsequent to these amendments the estimated lifetime of assets ranges from [...] years. This arrangement is in accordance with the prior Siminn cost analysis pursuant to Decision no. 7/2010.

Siminn uses the indexation method to calculate the estimated replacement cost or repurchase price for assets (Gross Replacement Cost, GRC), at 2012 average price level (real terms) using the consumer price index.

The real estimated price reduction of equipment for the period was assessed in accordance with price tilt. Siminn allowed for a [...]% real price reduction of equipment used for this service.

The Siminn cost model calculates depreciation of investments taking into account return on investment in accordance with weighted average cost of capital (WACC) by using the tilted annuity methodology. This methodology takes into account real price development of assets where a reduction in price leads to greater depreciation in the first years of the lifetime of an investment in the calculation of annual payment. The basic premise in these calculations is to estimate replacement cost or repurchase price of assets (GRC) when the annual payment is calculated along with the estimated lifetime of individual components of the system

The annuity was calculated using the formula:

$$Annuity = \frac{WACC - t}{1 - \left(\frac{1 + t}{1 + WACC}\right)^{l}} \times GRC$$

where

WACC = real cost of capital t = tilt l = investment lifetime



GRC = estimated investment repurchase cost

WACC of 8,0% is used in calculation of the annuity.

In a letter dated 20 March 2013 the PTA made the following observations regarding the investment base:

[...]

In Siminn reply dated 11 April 2013 it states:

[...]

5.2 The position of the PTA

Siminn estimates the gross replacement cost (GRC) on the basis of historical costs. Siminn calculated according to the gross book value (GBV) where the financial asset lifetime was the book lifetime. The cost price of the investment was projected to the average price level for the year 2012 using the consumer price index, taking into account [...] price trend of equipment per annum in accordance with price changes using the tilted annuity method.

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In accordance with the Administration's authority from Article 14 of Regulation no. 564/2011, the PTA agrees that the cost price of investments based on historical cost should be projected using the consumer price index to average price level of the year 2012 in order to find replacement cost of investments.

Tilt

In accordance with the PTA authorisation from Article 15 of Regulation no. 564/2011, the PTA plans to endorse Siminn's use of the tilted annuity depreciation method. The tilted annuity depreciation method takes into account forward-looking price trends where higher depreciation matches falling prices during the prior part of the lifetime of the equipment rather than later, instead of equal depreciation as used in the straight-line method. This is among other things because of the risk inherent in investing under such circumstances. The tilted annuity depreciation method is an approximation of the economic method but is much simpler to implement.

Siminn allows for [...] real price tilt of equipment. The percentage proportion used by Siminn is in accordance with that used in the last cost analysis for bitstream access, see PTA Decision no. 7/2010.

Lifetime

Instead of economic lifetime, Siminn mainly uses financial asset lifetime. The company keeps in mind that the financial asset lifetime reflects the real lifetime of the equipment in question.



Academically speaking it is proper to distribute and depreciate investment costs using the economic lifetime of assets. The economic lifetime of fixed operational assets is the time that such assets last in commercial operations, that is to say from time that they are ready for use in operations and until they can no longer be used or are obsolete, for example because of technical innovation. Deciding the period of depreciation of specific assets is on the other hand not easy which means that one must take into account experience of the lifetime of specific categories of assets as a rough estimation when deciding the percentage depreciation. If the real economic lifetime of operational assets is not completed when the estimated lifetime has been reached then it is normal to set the scrap value at ISK 0. This is because one must allow for regular replacement as there are rapid technological advances in this field.

The percentage proportion used by Siminn are in accordance with that used in the last cost analysis for bitstream access, see PTA Decision no. 7/2010.

The PTA intends to endorse methodology used by Siminn for estimating capital expenditure for the company's bitstream access.



6. Operating costs

6.1 Siminn/Mila analysis

Siminn submitted a statement of operational expenditure (opex) for the company's bitstream access for the first nine months of 2012. Siminn used historical costs from the company's bookkeeping where costs were allocated to various categories of Siminn bitstream access services.

The breakdown in the company's bookkeeping commenced with separation of accountancy where the emphasis was placed on bitstream access and costs in the Siminn SAP system where operating costs for the year 2012 were entered in bookkeeping accounts. Operating costs for purchase of goods and services from Mila were however partly calculated from unit costs from Mila and the number of units (number of users).

• Operating costs for wholesale bitstream access according to the Siminn bookkeeping system was divided into the following cost centres: [...]

Expenditure in the above specified cost centres was then subdivided into activities that are further described in Section 7 here below which finally results in separation of the cost items that belong to Access Options 1 and 3.

Share in joint costs, management, IT and senior management or the above operations was captured in accordance with separation of accountancy.

With a letter dated 20 March 2013 the PTA made the following observations with respect to [...]

6.2 The position of the PTA

Siminn analysis of operating costs for the company's bitstream access according to Access Options 1 and 3 is mostly based on information from the company's bookkeeping of the operational year 2012.

Siminn provided the information on opex for wholesale bitstream access along with the requested explanations and the PTA bases its assessment on this information. The PTA also builds on data that shows financial separation in Siminn operations in accordance with the obligation for separation of accountancy.

The PTA has examined the Siminn criteria, calculations and conclusions for the Siminn bitstream service opex.

The PTA accepts the Siminn conclusions on the opex on which calculations for wholesale costs for bitstream access are based.



The PTA bases its assessment on the above specified criteria and information from Siminn but reserves the right to review the above specified position should it come to light at later stages that the criteria for opex have changed or that there is, in PTA's opinion, a need for a more detailed examination of the division of specific cost items between income areas.



7. Cost allocation

7.1 Siminn/Mila analysis

Siminn uses historical costs (top-down model) where costs are allocated to specific services (FAC).

Figure 7.1. shows how financial and operating costs are divided between individual activities, are then allocated to service elements and finally to products.

Figure 7.1. Allocation of costs to specific service elements



According to the cost analysis, Access Option 1 involves two service elements:

- Access and MDF services and
- DSL DSLAM

and prices for ADSL and VDSL services in Access Option 1 are calculated from this.

Access Option 3 involves all service elements shown in figure 7.1, that is:

- Access and MDF services
- DSL DSLAM
- Core switching
- Backhaul switching
- Core distance
- Backhaul distance
- BRAS and
- *CPE*



and prices for ADSL and VDSL services in Access Option 3 are calculated from this.

Opex for the year 2012 and annuities of investments according to the Siminn cost analysis are shown in table 7.1.

Table 7.1. Opex and capex divided by activity [...]

Opex of Siminn bitstream service for the year 2012 amounted to approximately ISK [...] and the annuities of investments amounts to about ISK [...].

As is stated in Section 7.1, overheads amount to about ISK [...] which represents [...]% of direct costs.

Overheads are allocated to specific activities in accordance with their share in total costs as shown in table 7.2.

Table 7.2 Division of overheads by activity [...] [...]

The total cost for each activity is then allocated to service elements according to varying allocation rules. This division is shown in Itemisation on page 62, where the cost items that relate to Access Options 1 and 3 are marked in green.

According to the division of costs proposed by Siminn, total costs for the year 2012 for Access Options 1 and 3 are about ISK [...], see Table 7.3.

Table 7.3 Total cost for each service item in Access Options 1 and 3 [...]

Costs for Access Option 1 are according to this about ISK [...] and additional costs for Access Option 3 are about ISK [...]. Furthermore, the costs for IP TV service are about ISK [...] and VoIP service about ISK [...].

7.1.1 Access Option 1

As stated above, Access Option 1 is composed of two service elements:

- Access and MDF services and
- DSL DSLAM

There is further discussion on the cost of these service elements in Sections 7.1.1.1 and 7.1.1.2 here below.

7.1.1.1 Cost of access network (Access and MDF services)

The prices for *Access and MDF services* are calculated on the basis of the Mila tariff and composed of the following elements:

• Access MDF



- *Cabinets electricity*
- Fiber Lines
- MDF
- Leased access lines
 - Cabinet subscriber, subloop
 - Local Exchange subscribers, shared access
 - Local Exchange subscribers, full access

Table 7. shows how the cost of the access network is split.

Table 7.4 Cost split for access network [...]

The cost is split between ADSL, VDSL and SHDSL access service then the unit prices per month are calculated for ADSL and VDSL.

In a letter dated 27 September 2013 Mila proposed that costs for leased lines be split evenly between VDSL and ADSL (see discussion in Section 7.1.3) and the costs for electricity in street cabinets and fibre lines in street cabinets would also be split equally between ADSL and VDSL. Mila considers that one could argue that in reality this is a case of a development of systems rather than a choice between two technical solutions as all lines, regardless of whether they are for ADSL or VDSL services, are connected in street cabinets. The PTA has no objections to this proposal from Mila and for this reason the cost is split equally between ADSL and VDSL.

The changes made by Mila to its tariff for local loop access on 1 August 2013 are taken into account as the price for access to the upper frequency range of the local loop increased from ISK 317 to ISK 344. This is the reason for the two prices for *Access and MDF services*, before and after the changes. Table 7.5 shows unit costs for the access network for ADSL and VDSL.

Table 7.5 Unit costs per month for the access network (Access and MDF services) [...]

7.1.1.2 DSLAM costs (DSL DSLAM)

In the Siminn cost model DSLAM costs are split in such a manner that [...]% is for access and [...]% for traffic. With a letter dated 20 March 2013 the PTA requested further information with respect to allocation of DSLAM costs. The PTA requested explanations on split of the DSLAM costs between traffic ([...]%) and access ([...]%), that is to say on how this percentage split was arrived at. Then the PTA requested explanations as to why costs for Internet traffic were included when calculating costs for access to DSLAM. Furthermore the PTA requested further explanations on the criteria for the cost factor that was used to decide the varying weighting of ADSL, VDSL and SHDSL in investments.

In the Siminn reply dated 11 April 2013 it states:

"Activity to service"



Siminn splits costs for each DSLAM on the basis of the user side on the one hand and the system side on the other. The user side is assessed at [...]% of cost and the system side as [...]% of cost. The main criteria for this split are the reference figures from Analysys Mason and the correspondence with the prior cost analysis and the proportion of TV service in DSLAM costs.

Television service then takes about [...] and Internet takes about [...]. Finally, VoIP [...]. This split is estimated on the basis of traffic from the service side and these same proportions are used when splitting the access part (DSLAM) in Internet, IP TV and VoIP as for the same units when costs for traffic are split between these units (transport backhaul). In reality it would be possible to elaborate this in other ways but Siminn considers this to be a sensible method for assessing the split in costs."



"DSLAM port cost

Siminn calculates factors that are used to split costs of DSLAM ports. The factors are based on the newest purchase price of user cards from Alcatel. Each type of DSL port receives its factor on the basis of the purchase price of the cards. In this way a port for VDSL is [...] times more expensive than an ADSL port today. These factors only cover the investment part.

Costs for "Depreciation and capital employed" have been corrected but as the PTA pointed out the proportion of DSL access of the total cost for DSLAM had not been added. In addition to this a correction was made to opex as on closer inspection it came to light that the prior elaboration was not correct.



The PTA requested explanations as to why costs for Internet traffic were included when calculating costs for access to DSLAM, see sheet "activity to service". DSL connections have always been priced with simple bandwidth for Internet traffic, that is to say best effort. Siminn considers it reasonable to consider reviewing this methodology. Today, end-users pay for Internet bandwidth in DSL systems while TV content providers pay specially for bandwidth."

With a letter dated 3 May 2013 the PTA requested further explanations of the split of DSLAM costs and information on reference figures from Analysis Mason that Siminn mentioned in support of its case. Furthermore the PTA requested information of free ports, split into ADSL, VDSL, ISDN and SHDSL.

In an e-mail dated 17 May 2013 Siminn submitted further explanations on the split of DSLAM costs:

"1. Reply to the PTA question on reference figures for DSLAM costs

Reference figures like this are a kind of approximation used to enter costs for individual system units in cost analysis as accurately as possible. The criterion for this split is cost price for "average" DSLAM on 1 October 2012. As this is a kind of approximation one can say that this split could be different, for example in the range of [...], that is to say according to circumstances of each location. In some instances the cost of fibre-optic trunk is much greater than shown in calculations but against this the costs of ISAM equipment could be higher. What Siminn is wary of in the use of this methodology is that fixed unit cost on the basis of user for TV services is not a justifiable method of recouping cost. One has to keep in mind that under certain circumstances, 10 TV users on DSLAM can create proportionately greater load than 100 TV users would do under normal circumstances. Siminn is prepared to examine and discuss another approach to this implementation in cooperation with the PTA.

The following calculations were used for reference: [...]

On 21 May 2013 Siminn then submitted information on the number of free ADSL/ADSL ports on DSLAM and it was stated that the ports were compatible with both ADSL and VDSL connections.

The PTA had made further observations on the DSLAM cost with a letter dated 28 June 2013. There it states:

"In the Siminn cost analysis, the investment base is based on historical cost. Then various cost factors are used for ADSL, VDSL and SHDSL which are related to current cost of user cards, to split historic investment costs between varying ports.

The PTA considers this methodology to be incorrect. It would be more reasonable to use historic cost as the basis as entered in the bookkeeping for the equipment in question as this split is established in an adequate manner. Another option is to use investment replacement cost.



In the Siminn analysis there is a breakdown of investment costs for VDSL on the one hand and ADSL and SHDSL on the other hand, see the following overview from the PTA.

[...]

If the cost of the surveillance system is split between VDSL on the one hand and ADSL and SHDSL on the other on the basis of proportion of cost then the cost split would be the following:⁵

[...]

The above split is based on Account no. 530088 containing investment in equipment related to Siminn VDSL service and that the Account nos. 530015 and 530055 contain investments in equipment related to Siminn ADSL and SHDSL service.

Given data supplied by Siminn, the total number of DSL ports was [...] on 1 October 2012 with the composition as shown in the following table. [...]

Siminn investments specified in the cost analysis are up to the end of September 2012 and the above specified figures for the number of ports are for the same time.

The PTA considers that one should take all ports into account when calculating investment costs per port and not only ports that are in use. One may however allow for use of ports being less than 100% and a normal demand would be for utilization around [...]."

In an email from 22 August 2013 Siminn submitted a revised cost analysis in accordance with the PTA observations.

The PTA considers that one should take into account the fact that in an efficiently operated electronic communications company, efficient use of equipment is assumed which means that investments are not made in excess of projected demand for the service that uses the investments.

According to the Siminn cost analysis the reference is the booked base investment and actual use of ports. In the opinion of the PTA, in this instance this leads to an overvaluation of investment costs for each port as Siminn real utilization is only [...]% as opposed to the normal demand for utilization being more than 80% at any given time.

Having taken into account utilization of [...]%, Siminn estimates that the total number of ports that it would be possible to use on 1 October 2012 is about [...] thousand. In other words it is estimated that the investment that had been made in this equipment at this point in time would return [...] thousand ports that could be used. Of this it is estimated that about [...] thousand ports would be used for VDSL and about [...] thousand for ADSL and SHDSL, see table 7.6 here below.

⁵ Cost needs to be divided between ADSL and SHDSL equipment.



Table 7.6 Estimated use of DSL ports [...]

With a letter dated 7 September 2013 Mila proposed that the price for ADSL and VDSL access would be the same as the conclusions of the newest edition of the cost model showed an insignificant difference between ADSL and VDSL. The PTA accepted this proposal from Mila.

The annual fee for investment in DSL ports is ISK [...]. Given [...]% utilization of ports ([...] ports) the investment part of the unit price is thus ISK [...] per month for ADSL and VDSL ports.

Operating costs for DSL ports are about ISK [...] on an annual basis. Siminn made no distinction in operating costs between different types of ports which means that the costs are split equally over the total number of ports in use. When calculating operating costs for port, Siminn uses the number of ports in use at the end of 2012 ([...] ports) and the unit cost is ISK [...] per month.

This means that the total DSLAM unit cost of ADSL and VDSL ports is ISK [...] per month as is shown in table 7.7.

Table 7.7 DSLAM unit cost [...]

7.1.1.3 Additional costs for TV service and VoIP

In Access Option 1 it is possible to have VoIP and multicasting opportunities activated on the DSL connections purchased with Access Option 1.

The annual costs for TV service are about ISK [...] and for VoIP service they are about ISK [...].

The cost for TV service (multicast) is split by the number of DSLAM and bandwidth. The monthly fee for each IP-DSLAM and for reserved bandwidth (Mb/s) is ISK 13.63.

VoIP costs are divided between users of this service and the monthly fee per user is ISK 55.85.

7.1.2 Conclusion, Access Option 1

The costs for Access Option 1 are specified in table 7.8.



Table 7.8 unit costs per month - Access Option 1

From and including 1 February to 31 July 2013

Activity	ADSL/VDSL
Access and MDF services	[]
DSL DSLAM	[]
Total cost - Option 1	885

From and including 1 August 2013

Activity	ADSL/VDSL
Access and MDF services	[]
DSL DSLAM	[]
Total cost - Option 1	912

From and including 1 February 2013

Type of service	pr. DSLAM pr. Mb/s
IP_TV (VoD, DSLAM)	13.63

Type of service	Monthly fee
VoIP	55.85

7.1.3 Access Option 3

As is stated here above, Access Option 3 is composed of the service items in Access Option 1 with the addition of the following service items:

- Core switching
- Backhaul switching
- Core distance
- Backhaul distance
- BRAS and
- *CPE*

In the Siminn cost analysis, Siminn uses a specific methodology to divide and allocate costs for *Core switching*, *Backhaul switching*, *Core distance* and *Backhaul distance* down to ADSL, VDSL and SHDSL service. This methodology leads to VDSL costs for these service items being proportionately lower than ADSL and SHDSL costs.

With a letter dated 20 March 2013, the PTA requested information on the cost split for Core and Backhaul Switching and on the coefficients used by Siminn for splitting costs.

In the Siminn reply dated 11 April 2013 it states:



"Switching Core backhaul

[...]

In a letter to Mila dated 18 September 2013, the PTA made observations regarding the cost split for the service items Backhaul distance and Core distance. In a letter it says:

"In the cost analysis, in sheet Backhaul Core revised, there is a calculation of the unit price for the contribution by the backbone network (Backhaul distance and Core Distance) in the VDSL and ADSL services in Access Option 3.

According to the analysis the cost split between VDSL and ADSL for these service items is to a large extent based on a distinction in costs and users between the capital area and the countryside.

The Post and Telecom Administration (PTA) considers it not to be appropriate to base split on costs using these criteria.

According to the PTA Decision no. 8/2008, the price for bitstream shall apply as average price for the whole country where the geographical delineation of the bitstream market is all country. A consequence of the country being one market area is that the same costs shall be used for the whole area. It is thus not authorised to split costs in the calculation of prices between capital area on the one hand and the countryside on the other.

According to the Mila distribution plan work is in progress on developing a VDSL system which will cover the whole country and replace the ADSL system. VDSL connections in the countryside have increased significantly from the figure specified in the cost analysis. The above further supports the use of average cost for the whole country as a reference.

For this reason the PTA requires that Mila recalculate unit prices for Backhaul distance and Core Distance in accordance with the above specified observations and that the average cost per user for the whole country be used as a reference."

With a letter dated 27 September 2013 Mila submitted a revised cost analysis in accordance with observations made by the PTA but with certain observations on the arrangement where the share of ADSL and VDSL in leased line costs was based on average price. In the Mila letter it says:

"In cost analysis for Access Options 1 and 3, costs that belong to ADSL on the one hand and VDSL on the other were specifically allocated to the service in question. In this way leased line costs for ADSL leased lines were allocated to ADSL and leased lines used for VDSL were allocated to that service. If VDSL had not been developed in the countryside, the costs for leased lines in the countryside were mostly allocated to ADSL. Mila points out that the basis for the calculation was leased line costs by service and not division by capital city and



countryside. Specific costs for equipment in street cabinets such as fibre-optic threads and electricity were allocated to the cabinets.

The PTA appears to be of the opinion that this is a question of calculation of bitstream access without regard to whether services are ADSL or VDSL when considering leased line costs. It is appropriate to point out that it is by no means certain that leased line costs for VDSL service will in the future be as great as ADSL as the final distribution plan is not yet available. It is more likely that they will be lower per user which means that the PTA methodology for finding unit price for VDSL returns an abnormally high cost as costs are allocated to services that do not belong to VDSL. In addition to this, ADSL service will not be allocated a share of specific VDSL costs in the same manner.

Mila points out that it has not been customary for the PTA to look at future costs when calculating prices but it has rather been the practice to almost exclusively relate to historical costs."

In the letter, Mila proposed that if costs for leased lines were to be distributed in this manner then the cost of electricity in street cabinets and of fibre lines in street cabinets should be distributed to telephone exchanges. In the letter it furthermore states:

"One could argue that in reality this is a development of systems rather than a choice between two technical solutions, as all lines, regardless of whether they are for ADSL or VDSL services, are connected in street cabinets. In addition to this all electricity costs and costs for hosting in telephone exchanges is distributed proportionately on VDSL and ADSL in calculation of DSLAM port cost, irrespective of whether equipment for VDSL is located in street cabinets rather than in telephone exchanges. In this way VDSL is actually taking on costs for hosting and for electricity for DSLAM located in telephone exchanges."

Mila also submitted another version of cost analysis which took into account these proposals and proposed that the price for ADSL and VDSL would be the same as the conclusion showed an insignificant difference in the price of ADSL and VDSL in this new proposal.

Mila also proposed in its letter that certain changes should be made on the cost model relating to distribution frame costs, to the Mila tariff increase for local loop lease and to the Mila price for full access to local loop.

With these changes, costs for most service items were equally divided between VDSL and ADSL services. Only the difference in costs for DSLAM ports between ADSL and VDSL service remained, as the cost for each VDSL port was ISK [...] higher than for an ADSL port.

As this difference in price is a very small part of the total cost, the PTA agreed in an email dated 8 October 2013 to the Mila proposal that price for ADSL and VDSL would be the same and subsequent to this Mila submitted the final version of the cost model for Access Options 1 and 3.



7.1.4 Conclusion, Access Option 3

The unit costs for Access Option 3 are specified in table 7.9.

Table 7.9 Unit costs per month - Access Option 3

Activity	ADSL/VDSL
Access and MDF services	[]
DSL DSLAM	[]
Core and Backhaul Switching	[]
Core distance	[]
Backhaul distance	[]
BRAS	[]
CPE (wholesale build)	[]
Total cost - Option 3	1,367

7.2. The position of the PTA

The PTA endorsed in all main respects the methodology used by Siminn and Mila for allocating costs in the above specified cost analysis with the changes that have been made in its processing by the PTA and that have been announced in this draft Decision.

In the initial Siminn cost analysis the calculations for DSLAM port costs were made on the basis of booked investment costs and on the real use of ports. In the opinion of the PTA, in this instance this leads to an overvaluation of investment costs for each port as Siminn real utilization is [...]% as opposed to the normal demand for utilization being more than 80% at any given time. Therefore the PTA concludes that the calculation of DSLAM costs shall allow for 80% utilization of ports.

As has been stated here above, Mila splits costs for each DSLAM on the basis of the user side on the one hand and system side on the other. The user side is assessed at [...]% of cost and the system side as [...]% of cost. The PTA does not plan to make any objections to this methodology for the time being.

Furthermore the PTA does not intend to make objections to the calculations of TV service and VoIP service to Access Option 1 at this point in time but plans to review the cost criteria when more experience has been gained of the use of the Access Options. The conclusion of the analysis was that additional cost for multicast was ISK 13.63 for each Mb/s of reserved bandwidth in DSLAM and that VoIP cost for a defined connection was ISK 55.85.

A decision on PTA's new market analysis of the market for broadband access is expected within the next months and subsequent to this the PTA will request new cost analysis that may be based on new criteria with respect to these issues. The PTA is thus not endorsing the Mila criteria in this context as a permanent solution.



With respect to the calculation of costs for bitstream access the PTA considers that cost for data transfer (Backhaul distance and Core distance) should be allocated irrespective of whether it is for ADSL or VDSL service. PTA considers that in reality it is a matter of development of a bitstream system with xDSL technology, rather than being a case of two different technical solutions.

The methodology on which the initial Siminn analysis was based has meant that significant imbalance would have resulted in the pricing of ADSL service on the one hand and VDSL service on the other. This particularly applies to Access Option 3 as a large part of the backbone network cost was allocated to ADSL service on the basis of a split in service between the capital city area and the countryside. One should keep in mind in this relation that in the obligation for price control in Decision no. 8/2008 it is specified that prices should apply as average prices for the whole country, that is to say that they shall be based on average costs for the whole country.

The development of the VDSL is in the opinion of the PTA related to an upgrade from ADSL systems to VDSL systems, in the development from ADSL technology over copper local loops to VDSL technology. The roll-out of VDSL started in 2010 and has been rapid ever since. This development took place mainly in the capital area until 2012. As from 2012 the VDSL roll-out in the country has been growing fast. Figure 7.2 shows Mila's existing and planned distribution of the VDSL service in Iceland until 2014.



Figure 7.2 Existing and planned distribution of Mila VDSL system until 2014



Using the HC FAC cost model, the cost of ADSL is based on national coverage, covering both urban and rural (uneconomical areas), while the cost of VDSL was in the last cost analysis based on urban areas, (economical areas), as the roll-out started there. In Mila's case this could cause too low VDSL wholesale prices and too high ADSL prices in the transfer period from ADSL to VDSL, especially for backbone costs in rural areas, until VDSL has fully (or mostly) replaced ADSL. In PTA's opinion it is important to diminish the disadvantages of the HC cost model in such situation causing price difference, giving wrong investment signals for the new technology (VDSL), which could prolong the transfer period.

By dividing backbone network costs equally between ADSL and VDSL services one ensures greater stability and predictability in pricing during the VDSL roll-out period, which is advantageous for the investment environment. If the price for either service were dependant on how development progressed there would be greater uncertainty on price development in the light of rapid migration from ADSL service to VDSL service.

The PTA conclusion is that no distinction shall be made in price for ADSL and VDSL services in Access Options 1 and 3. On the basis of this criterion it was the conclusion of the cost model that the monthly price for Access Option 1 should be ISK 885 and that the monthly price for Access Option 3 should be ISK 1,340. On 1 August 2013 access to the upper range of the local loop increased by about ISK 27 and the conclusion subsequent to this increase is that the monthly price for Access Option 1 shall be ISK 912 while the monthly charge for Access Option 3 shall be ISK 1,367.

Compared to current temporary prices, the price for an ADSL connection according to Access Option 1 will increase from ISK 911 to ISK 912 and the price for a VDSL connection according to Access Option 1 will drop from ISK 1,093 to ISK 912. The additional cost for multicast increases from ISK 12.51 according to the temporary tariff to ISK 13.63 for each Mb/s of reserved bandwidth in DSLAM and VoIP cost for a defined connection will increase from ISK 52 to ISK 55.85. The price for ADSL connection according to Access Option 3 will drop from ISK 1,629 to ISK 1,367 while the price for a VDSL connection according to Access Option 3 will increase from ISK 1,116 to ISK 1,367.

With respect to the observation from Mila to the effect that the PTA is looking at future costs, the Administration wishes to emphasise that the reference used is historical cost within the Mila DSL service and that this is rather a question of the rule for allocating cost to specific services.

In its assessment the Administration used the above specified criteria and information from Siminn and Mila. It however reserves the right to view the above specified position at later stages if information proves to be inadequate or if criteria have changed.



8. Wholesale switch

In Decision no. 38/2012 on Access Option 1 at Siminn, it was among other things disputed whether wholesale switch was necessary for Siminn to be able to provide VDSL access according to Access Option 1 and the conclusion was that this should be the case.

In the treatment of this matter with the PTA, Siminn submitted, on 10 December 2012, a cost estimate to decide the charge for investment, installation and operation of wholesale switch. This cost estimate was the basis for calculation of temporary setup and monthly charge for investment and operating costs, as specified in the Decision.

With the Decision, temporary prices were set for access to wholesale switch for Access Option 1. According to the temporary tariff the setup fee was ISK 250,000 for each installed wholesale switch and the monthly charge for investment and operation costs was ISK 14,777 for 1 Gb/s and ISK 18,538 for 10 Gb/s. Then it was specified that the monthly charge in question would decrease proportionately with the entry of a new party to the service in question, according to more detailed provisions in the PTA decision on the Siminn cost-analysed prices. In the Decision it was furthermore specified that the temporary prices should apply until the PTA had endorsed the Siminn cost analysis. Siminn was obliged to submit cost-analysed prices to the PTA no later than 1 February 2013. When the PTA had endorsed the Siminn cost-analysed prices, companies were obliged to settle any incidental difference between those prices and the above specified temporary prices. The settlement was to be completed within a month from the cost-analysed prices having been endorsed by the PTA.

In an e-mail dated 29 August 2013 the PTA requested that Siminn submit real figures on costs for wholesale switch that had already been purchased and set up.

As has been previously stated the operation of the Siminn bitstream system transferred to Mila on 1 September 2013 and with it the operation of wholesale switch.

8.1 Mila cost analysis for wholesale switches

On 9 October 2013 Mila submitted cost analysis for wholesale switches. The Mila analysis was based on information on the cost of the 26 wholesale switches that had been installed when Mila took over operation of the bitstream system in September 2013.

Mila proposed that the methodology for calculating charges for wholesale switch should be changed from the arrangement that had been used subsequent to Decision no. 38/2012, in order to simplify implementation.

Mila proposed that the price for ports in excess of 1 should be lower than for the first port. Mila argued in favour of this proposal in the following manner:

"The reason why Mila considers it normal that the price per port in excess of one should be lower than for the first port is that the investment is almost the same for Mila when one port is used or many.



In each wholesale switch there are 24 x1Gb/s ports and 2x10Gb/s. It is also possible to add equipment to the switch which adds 2x10Gb/s ports while reducing 1Gb/s ports by two. The port can either be used as a connection with DSLAM or with an Access Option 1 service provider. Today Míla normally uses 1 or 2x1Gb/s ports for each DSLAM. In large exchanges there are 5-15 DSLAM while in small exchanges there are 1-2 DSLAM. This means that in larger exchanges there are between 10-20 ports in use to connect DSLAM. The idea is that Access Option 1 service providers will use 10Gb/s ports in such exchanges and 1-2Gb/s in smaller exchanges.

If ports are added to a wholesale switch, this will generally mean an insignificant increase in equipment costs particularly in the case of 1 Gb/s ports, as long as there is no investment needed in new equipment.

Mila considers it fair to have higher charge for the first port and a much lower charge for the next one. Mila calculates the number of equivalents using a similar methodology as is used in leased line tariffs in such a manner that immediately at the outset the existing connections in the switches are taken into account. Mila also proposes an annual review of price where the use is taken into account such that customers would benefit where more customers were connected into the switches and if more ports were used. It should be pointed out that this methodology could lead to a temporary situation where Mila was below costs if use was disadvantageous and vice versa."

Míla proposed that the price for ports in excess of the first port from a customer would be [...]% of the price for the first port in the case of 1 Gb/s and [...]% in the case of 10 Gb/s ports. Mila explains this in the analysis:

"When assessing the proportion, Mila takes into account the fact that potential ports in 1 Gb/s are more than in 10 Gb/s and for this reason it is normal that they are less expensive than 10 Gb/s. The price for 10 Gb/s takes into account that there are much fewer potential 10 Gb/s ports, that is to say there are only four. In addition to this Mila needs to make an additional investment of over ISK [...] for the third and fourth ports."

Mila also considered it proper to change the tariff in such a way that a fixed monthly fee would be calculated without taking into account the number of parties that connect to the wholesale switch. Today there were [...] parties connected into the switches. The tariff according to the PTA Decision is in the opinion of Mila extremely complex to implement. It would mean that Mila would end up having differing prices at each location depending on use and number of customers.

Mila proposed the use of port equivalence for the calculation of monthly fee for ports such a manner that a port in excess of the first port from the customer be [...] equivalence for a 1 Gb/s port and [...] for a 10 Gb/s port. According to the Mila cost analysis submitted by the company on 18 October 2013, these calculations using port equivalence returned the following monthly charges:



	1	
	Gb/s	10 Gb/s
First port	[]	[]
Ports in excess of one	[]	[]

In a letter from the PTA to Mila, dated 26 November 2013 the institution proposed amendments to the Mila proposal for calculation of port equivalence. In the opinion of the PTA there was insufficient allowance for varying performance/load of 1 Gb/s and 10 Gb/s ports in the arrangement proposed by Mila.

The PTA proposed that the first 1 Gb/s would be the base case with equivalence value of 1 while the equivalence of the first 10 Gb/s ports would be 1.6. The PTA had in mind in this connection the methodology that was used in the determination of equivalences for trunk lines in the cost model elaborated by Analysis Mason for Mila, see the PTA Decision no. 14/2011. According to that methodology the charge for the first 10 Gb/s port would be calculated according to the following formula:

$$G_{jald_{10 Gb/s}} = G_{jald_{1 Gb/s}} \times \left(\frac{10 \text{ Gb/s}}{1 \text{ Gb/s}}\right)^{exponent}$$

The exponent can vary and according to a prior study made by the PTA it was in the range of 0.2 to 1.0. If one uses the exponent 0.2 then the equivalence would be 1.6 according to the above formula while if one used the exponent [...], which was used for larger connections of leased lines, then the equivalence would be [...].

As previously stated the PTA proposed the use of the equivalence 1.6 and when making the choice it was taken into account that the increase of 10 Gb/s ports from the existing price would be moderate.

For ports in excess of one the PTA proposed that the equivalence would be 30% of the first ports such that equivalence of the 1 Gb/s ports in excess of one would be 0.3 while the equivalence of 10 Gb/s ports in excess of one would be 0.48. In comparison with the Mila proposal, the change has the effect that the price for the first 1 Gb/s port [...] while the price for the first 10 Gb/s port [...], also the price of additional ports increased.

Mila did not object to this arrangement for calculation of equivalences.

In the Mila analysis it is stated that investments had been made for [...] wholesale switches for xDSL. Twenty six wholesale switches⁶ have been installed which means that there are [...] wholesale switches in stock. The number of ports connected in those wholesale switches was [...].

Mila allowed for the setup fee being composed of the cost of installing the wholesale switch, finishing and defining DSLAM VLAN settings.

⁶ At the time to which the analysis applies, that is to say September 2013.



According to the Mila cost analysis the installation cost of the 26 wholesale switches that were installed by Siminn is about ISK [...] which means that the average installation cost for each switch is about ISK [...]. By far the largest part of installation cost is labour which Míla estimates as about ISK [...]. Registered labour cost according to the Siminn SAP system was just under ISK [...] and according to Mila, labour was registered at the day rate though a large part of the work took place at night. In addition to this, part of the work was registered directly on operations and is thus not included. In order to take into account these imperfections in entering working hours, Mila applies a [...] addition on the daily rate. Mila considers that in all likelihood this cost is underestimated.

In the opinion of Mila it is of little importance whether one port is being installed or many. Most of the cost involved is in setting up the switch itself, including travel costs and organisation. For this reason Mila considers it appropriate to divide the setup cost equally between customers who request connection.

Mila allows for two users for each wholesale switch, which means that the installation cost is calculated at ISK $220,000^7$ for each user.

Mila proposed that the setup cost for wholesale switches would be higher in the countryside and in the analysis Mila states:

"Most wholesale switches have been installed in the capital area. It is much more expensive to install wholesale switches outside the capital city area. Mila considers it therefore normal that the setup fee should be higher in the countryside. Per diem has to be paid and travel costs in the countryside are normally higher than in the capital city area. Mila considers that additional costs can be from ISK [...] for installation of switches in the countryside. This amount allows for [...]."

In the analysis Mila also states the following with respect to setup fees:

"The setup fee allows for the wholesale switch being installed and connected for all parties at the same time. Should agreement not be reached on a time for the installation then each party must pay separately for his own installation on the basis of billed hours and incurred costs.

Mila considers it normal that the costs for alterations and additional ports be collected on the basis of billed hours, as such work varies greatly. Customers often request that the work is done during the night which increases costs."

In the Míla analysis it is stated that Siminn investment costs for basic equipment in 26 wholesale switches amounted to about ISK [...]. The additional investment for 10 Gb/s equipment was about ISK [...] and total investment costs thus ISK [...]. Mila does not allow for cost of bound capital in wholesale switches in stock in calculations.

⁷ Rounded up to the next 10,000.



The annuity of investments was calculated on the basis of a 5 year lifetime for equipment and with 8% WACC in accordance with the conclusions of the PTA on WACC for Mila for the year 2012.

In the Mila cost analysis, opex is based to some extent on an estimate but there is no experience yet to show real opex of wholesale switches. According to the cost analysis, opex is mainly divided into costs for a service agreement with the manufacturer of equipment, hosting in telephone exchanges and maintenance. Mila allowed for the same opex for both 1 Gb/s and 10 Gb/s and this cost is divided into port equivalents.

Mila used the following criteria when estimating opex:

- Annual opex for service agreement is [...] of investment cost of basic equipment. [...] wholesale switches were purchased and the total cost of the service agreement is calculated on the basis of this number.
- The participation of wholesale switches in hosting is about [...] of the lease fee for one cabinet (wholesale switches are generally kept in cabinets with other equipment).
- Maintenance for each wholesale switch is on average about [...].

In a letter from the PTA to Mila, dated 26 November 2013, the PTA proposed a reduction in opex of wholesale switches in the cost analysis which was equivalent to estimated cost of a service agreement for uninstalled switches.

The PTA did not consider it correct to take into account the wholesale switches that are in stock when calculating opex and in addition to this the costs for service agreements is an estimated amount.

Mila did not object to this reduction of opex.

Annual opex for 26 wholesale switches is, given the above criteria, about ISK [...].

Given these criteria, the calculated capex and opex per month is ISK 13,184 per equivalent. After having taken into an account port equivalents the monthly price for a 1 Gb/s port is ISK 13,184 and for a 10 Gb/s port ISK 21,095. Given that the monthly price for each port in excess of 1 is 30% of the monthly price for the 1st port, then the monthly price would be as shown in the following table:

Port	1 Gb/s	10 Gb/s
First port	13,184	21,095
Port in excess of one	3,955	6,328

A Draft Decision for cost analysis in accordance with the above was submitted to national consultation on 20 December 2013 and the consultation lasted until 13 January 2014.

In the consultation, Vodafone commented on the use of wholesale switches. Vodafone considered that the companies in the Skipti group used the wholesale switches to provide



services other than for Access Option 1. Vodafone requested that the PTA acquainted itself with the use of the switches and that their use would be take into account in the division of costs.

Subsequently the PTA sent a query to Mila with respect to use of the wholesale switches.

In the Mila reply, dated for February 2014, it was stated that the wholesale switches were used for more connections than connections for Access Option 1. Corporate connections to Siminn customers and connections with Siminn mobile phone transmitters and backbone connections with Siminn IP network were in existence.

Mila confirmed that the company's cost analysis from the autumn of 2013 had not been based on correct premises as the number of connections had not been correct, company connections had not been included in the list showing the number of connections. In September 2013, [...] corporate connections had been connected into [...] wholesale switches and these were corporate connections with Siminn, connections with Siminn mobile phone transmitters and backbone connections with Siminn IP network. The connections were all 1 Gb/s connections. Mila pointed out in this relation that the company considered that it had received an exhaustive list over the number of connections, but as corporate connections had been registered in another system the company had not received all information. This was then a misunderstanding in the collection of data.

The Mila reply was accompanied with a cost analysis for wholesale switches where corporate connections were taken into account along with other connections and a new price was calculated for ports. In its calculations, Mila reckons corporate connections as additional ports with Siminn and that they thus have equivalence of 0.3 Gb/s. The updated Mila cost analysis returned a basic rental price of ISK [...] instead of ISK 13,184 per month and other rental prices changed accordingly. The total number of equivalents according to the updated Mila cost analysis was [...]. Mila proposed that the setup fee for access to wholesale switch would be unchanged at ISK 220,000 for each counterparty that connected to the switch.

8.2 The position of the PTA

The PTA has examined the criteria for Mila calculation of setup and monthly charges for wholesale switch which is partly based from figures gained from real installation, from capex and from the operation of 26 switches in the year 2013. In some instances however there is no exact record of the costs incurred and for this reason the conclusion is also based on a Mila estimate of cost.

As is stated here above, new information was received in the national consultation with respect to use of wholesale switch. It has come to light that wholesale switches are used for services other than was specified in the initial Mila cost analysis and the use of wholesale switches is thus other than was thought. This information fundamentally changed the criteria on which the PTA had based its assessment of the Mila calculations and the conclusion that was published in the national consultation. The PTA considers it a serious matter that this fact



was not made clear in the Mila (and Siminn) cost analysis as it represents a fundamental change in the use of wholesale switches which is not in accordance with the PTA Decision no. 38/2012. The PTA has furthermore commenced an investigation on whether the above specified conduct by Mila constitutes a breach of the non-discrimination obligation which rests on Mila (previously Siminn) with respect to the offer of wholesale services and the breach of the transparency obligation by offering one party such a service without first updating the reference offer in accordance with the changes in question.

In the opinion of the PTA these changed criteria call for a total review of the Mila tariff for access to the above specified wholesale switches.

8.2.1 The use of equivalents in allocating costs

Mila proposed use of equivalents when deciding monthly rates for ports. As stated here above the PTA proposed that 1 Gb/s ports would be the base case with equivalence value of 1 while the equivalence of the first 10 Gb/s ports would be 1.6. Mila did not object to this proposal from the PTA.

Mila proposed that ports in excess of 1 would have lower equivalence than the 1st port with each user. The Mila proposal for price for ports in excess of 1 is lower based on the fact that the investment was almost the same for one or many ports in use. The cost of increasing the number of ports was very small compared with the cost of the wholesale switch itself.

In the Draft Decision that was published in the national consultation, it was suggested that the equivalence of ports in excess of 1 would be 30% of the equivalence of the 1st port so that the equivalence of 1 Gb/s ports in excess of 1 would be 0.3 and the equivalence of 10 Gb/s in excess of 1 would be 0.48.

Vodafone objected the arrangement of using lower equivalence for ports in excess of 1. In a letter from Vodafone it states:

"Vodafone points out that the method proposed by companies in the Skipti Group for cost of ports in excess of 1 is tailor-made to the needs of Siminn as they will connect to more than one port, for example where Siminn foresees that it will have direct corporate connections to fibre-optic or transmitter connections. The arrangement with respect to lower cost with each port is thus conceived in such a manner that the cost paid by Vodafone or other electronic communications companies is in reality subsidising access equipment for Siminn. Vodafone objects to this arrangement."

Subsequent to the PTA query to Mila concerning the Vodafone objections, Mila submitted an updated cost analysis for wholesale switches dated 4 February 2014. It contained a proposal from Mila that ports for corporate connections had the equivalence of 0.3 as was planned for Access Option 1 where 1 Gb/s ports were being used for these connections.



The PTA agrees with Vodafone that this arrangement for equivalence is more advantageous for Siminn than for Vodafone given current day usage, particularly when one considers the number of corporate connections that have been set up. Given this proposal from Mila, the average price for 1 Gb/s ports with Siminn would only be half of the average price that Vodafone would pay. It is therefore clear that with this arrangement, non-discrimination is not practised between Mila customers. This arrangement also creates a discrepancy in allocation of costs between service options as the arrangement means that DSL service bears more costs than other service options such as backbone network and mobile phone service.

It is no longer the case that the wholesale switches are only used for Access Option 1 as was originally planned but rather that there is now a variety of applications such as corporate connections with Siminn, connections with Siminn mobile phone transmitters and backbone connections with Siminn IP network. Given this changed usage of wholesale switches, the PTA considers there to be no grounds for ports in excess of 1 having lower equivalence than the first ports.

The PTA thus plans to retract the arrangement that was planned in the prior draft to decision and instead to have additional ports bearing the same cost as initial ports. The PTA plans nevertheless to employ equivalence in such a manner that 10 Gb/s ports have equivalence of 1.6 while 1 Gb/s ports have equivalence of 1.

Given the newest information from Mila on the number of ports in use in those 26 wholesale switches covered by the cost analysis, the number of 1 Gb/s ports was [...] and the number of 10 Gb/s ports was [...]. The total number of equivalents according to this is thus [...].

8.2.2 Setup charge for wholesale switches

The PTA Decision no. 38/2012 concerned the dispute between Siminn and Vodafone on Access Option 1 and the use of wholesale switches was part of the solution to this dispute. The manner in which temporary prices were decided took into account the information available at that time and that these switches were being used for Access Option 1.

In the light of the information that was received in the consultation, the PTA intends to discontinue the prior arrangement for calculation of setup fees for installation costs of wholesale switches. Now it is clear that the switches are not solely being used to provide xDSL services according to Access Option 1, as was initially planned, but they are also being used for other services. One has to take this into account when allocating costs to various services and this also applies to installation costs in the same manner as to other costs. One also has to take into account, which is now clear, that the use of parties that connect to wholesale switches varies greatly and this difference is much greater than it appeared to be when the planned PTA Decision was submitted for consultation. Vodafone is only using [...] port in each instance while Síminn is using up to [...] ports. The PTA considers there to be no longer grounds for setup cost being in its entirety split among those parties that now are connected without taking into account this new use.



According to the Mila analysis the setup fee is composed of 3 main constituents, that is to say installation of wholesale switches, finishing of the switches and definition of DSLAM, VLAN settings. In the Decision of the PTA no. 38/2012 it was decided that these costs would be paid with setup fee but it is appropriate to point out that all charges specified were decided on a temporary basis. The PTA considers however that a more accurate division of costs can be achieved by entering installation and finishing of wholesale switches as investment costs which is subsequently split between the ports. In this manner the cost is divided between the services in question and customers in accordance with use. With such an arrangement, costs will be recovered through monthly charges as is the case with other investment costs.

The remaining costs are for setting up and connecting ports which are dependent on the wishes of each individual customer and thus dependent on the services being used by the ports. Mila has pointed out that work required for connection and setup for Access Option 1 is more substantial than in the case of corporate connections. In the light of this fact the PTA can agree that this cost should be collected with the setup fee which is paid when wholesale switches are set up.

The total costs for installing 26 wholesale switches is ISK [...] of which labour costs are ISK [...]. Mila does however not have available information on how these costs are divided between labour and installation and finishing of the switches on the one hand and setup and connection of ports on the other. In the plan submitted by Siminn for the Decision on temporary prices, it was estimated that about half of the labour costs could be attributed to setup and connection. The PTA plans to use this division which means that costs for setup and connection of ports are thus estimated as half of labour costs which means ISK [...]. The setup fee for each counterparty for access to wholesale switch for Access Option 1 will therefore be ISK 93,000.⁸

Mila proposes that the costs for installation and additional ports be collected on the basis of billed hours, as such work can vary greatly. The PTA is at this point in time not opposed such an arrangement where it is in accordance with obligations in place for this service and in such a manner that there is absolute non-discrimination between the parties using the service.

8.2.3 Monthly charge for access to wholesale switches

Capex for the 26 wholesale switches that have been installed is approximately ISK [...] including the cost for installation and finishing of wholesale switches.

As is stated in Section 8.1 the PTA proposed a reduction in opex of wholesale switches in the cost analysis which was equivalent to estimated cost of a service agreement for uninstalled switches. The PTA does not consider it correct to take into account the wholesale switches that are in stock when calculating opex and in addition to this the costs for service agreements is an estimate. Mila did no object to this reduction of opex.

⁸Rounded up to the next 1,000. [...]



Annual opex for 26 wholesale switches is, given the above criteria, about ISK [...].

The PTA compared estimated opex of the wholesale switches with opex of DSLAM equipment⁹ which are in many respects analogous operations. PTA considers that the above specified comparison does not warrant further observations on the Mila criteria for opex.

In Section 8.1 here below one can see the split of capex and opex of the [...] wholesale switches covered by the cost analysis, along with calculations of monthly charges per port equivalent.

Investment costs	
Basic equipment	[]
10 Gb/s equipment	[]
Installation	[]
Total investment costs	[]
Lifetime of equipment in years	5
WACC	8%
Annuity of investment	[]

Table 8.1 Calculations of monthly charges per equivalent

Operating costs	
Service agreement	[]
Hosting and electricity	[]
Other operation and surveillance of	[]
operations	[]
Total operational costs	[]
Investment and operational costs	[]
Total equivalents	[]
Monthly charge per equivalent	9,289

Monthly charge for each equivalent is reduced from ISK 13,184 according to the PTA Preliminary Draft to ISK 9,289. The reason for the reduction is a significant increase in use of the wholesale switches than was previously allowed for and a change in the method of calculation. The monthly charge for 1 Gb/s ports will thus be ISK 9,289 and for 10 Gb/s ports it will be ISK 14,862.

Table 8.2 Monthly charges for access to wholesale switches

Port	Monthly charge per port
1 Gb/s	9,289

⁹Opex as a proportion of capex (with installation) between DSLAM equipment and wholesale switch.



10 Gb/s 14,862



9. Conclusion on tariff

9.1 Siminn/Mila analysis

The Siminn (and Mila) cost analysis for Access Options 1 and 3 is based on a methodology prescribed in the obligation for price control in the PTA market analysis of the wholesale market for broadband access (Market 12 now 5), see PTA Decision no. 8/2008. The methodology for the cost analysis was further elaborated in the cost model which was initially developed by Analsys Mason for the purpose of calculating prices for bitstream access, see Decision no. 7/2010 with respect to cost analysis for bitstream access.

The cost analysis here under discussion is based on the cost base for the year 2012. The following conclusion is based on a reviewed cost analysis for Access Options 1 and 3 submitted by Mila on 8 October 2013.

The cost for wholesale switches is specifically defined and is based on costs for 26 wholesale switches that had been installed when Mila took over operation of the DSL system from Siminn. The analysis is based on costs from 2013. The following conclusion is based on a reviewed cost analysis submitted by Mila on 18 October 2013 and on the amendments made by the PTA.

9.2 The position of the PTA

The PTA has examined the Mila cost analysis of Access Options 1 and 3 and wholesale switches for Access Option 1. In Sections 9.2.1 and 9.2.2 here below there is an overview of conclusion from the Mila cost models.

Pursuant to the PTA Decision no. 8/2008, the Decision on price for bitstream access shall take into account analogous service that is considered to be operated in an efficient manner and shall be ensured that the tariff is reasonably commensurate with the price for local loop access. In Sections 9.2.4, 9.2.5 and 9.2.6 these matters are specifically examined.

9.2.1 Tariff for bitstream access according to Access Options 1 and 3

The PTA accepts the Mila methodology and conclusion for cost analysis of bitstream access according to Access Options 1 and 3, with the amendments made during processing of the cost analysis. Other access prices are unchanged.

Taking into account the changes made by the PTA to the Mila cost analysis, cost-oriented prices for bitstream access are as follows:



Access Option 1¹⁰

Connection (upper frequency range of local loop)	Monthly unit price	
ADSL/VDSL _access part of network per user (EUDP)	ISK 912	

In the above specified price the increase in access price for copper local loops that came into force last 1 August is taken into account.

The above specified price for the access part of the network per user also applies to that part of the tariff for Access Option 2 which relates to user connections to DSLAM.

Multicast, Access Option 1	Monthly price for 1 Mb/s
Reserved bandwidth for each Mb/s per DSLAM	ISK 13.63

VoIP, Access Option 1	Monthly unit price
VoIP service per user (EUDP)	ISK 55.85

When calculating the reserved bandwidth the number of set-top boxes (STB) is estimated on the basis of the number of users of the broadband service for each operator. The required bandwidth is then estimated at each DSLAM, based on the number of STB's.

The following table shows the estimated bandwidth required for a given number of STB's:

Number of	Bandwidth	
STB's	Mb/s	
1 - 9	50	
10 - 29	130	
30 - 49	160	
50 - 99	240	
100 - 199	360	
200 - 399	560	
400 -	600	

When calculating monthly charges for the multicast service the bandwidth is estimated on the basis of the above table for each operator. From that the number of DSLAM's connected for each range of bandwidth is found for each operator (i.e. number of DSLAM's with 50 Mb/s, number of DSLAM's with 130 Mb/s, etc.) and then the number of DSLAM's is multiplied with the bandwidth and the unit price (ISK 13.63) for each operator.

¹⁰ In DSLAM or equivalent equipment at the location where the copper local loop connects to the distribution frame of the telephone exchange. Installation and connection is not included in the price, nor the wholesale switch.



Access Option 3¹¹

Connection (upper frequency range of local loop)	Monthly unit price
ADSL/VDSL _access part of network per user (EUDP)	ISK 1,367

The above specified tariff for Access Options 1 and 3 assumes that the upper range of the local loop is in use for bitstream access and the lower frequency range of the local loop is also being leased.¹² If the lower frequency range is not being leased then the counterparty shall pay for the frequency range of the local loop the sum of ISK 1,042 in addition to the above specified price. See further in the Mila reference offer for bitstream access.

Mila also charges setup fees¹³ for the local loop with new connections and for changes from ADSL to VDSL in Access Options 1 and 3. The existing setup fee for local loops is ISK 3,166, in accordance with the PTA Decision no. 30/2011 regarding tariff for the copper local loop, setup fee and access to main distribution frames.

The fee for taking over xDSL service (change of service provider) is ISK 1,329. In the cost analysis which led to PTA Decision no. 30/2011, the setup fee was made up from three parts, namely *Connection to the main distribution frame*, *Transport* and *Registration in Mila's system and administration*. The cost of the *Registration in Mila's system and administration* was ISK 1,329. As the work involved with changing the service provider of the xDSL service does not include changes in the distribution frame Mila suggested that only the registration and administration part of the setup fee would be charged for this service.

PTA did not object to Mila's suggestion as the price is based on the cost related to this service as calculated in the cost analysis (PTA Decision no. 30/2011).

9.2.2 Tariff for wholesale switches in Access Option 1

Having taken into account the changes made by the PTA to the Mila cost analysis, costoriented prices for wholesale switches are as follows:

¹¹ After transmission a backbone network to a connection point of another electronic communications company with BRAS.

 $^{^{12}}$ When access to the copper local loop is split between two different electronic communications companies then the party shall pay for shared access that has access to the upper frequency range of the local loop (ISK 344) while the other party shall pay for access to the lower frequency range (ISK 1,042) that is to say the price for full access less the price for shared access. If only the upper frequency ranges is used (naked DSL) then payment is the same as for full access (ISK 1,386).

¹³ Should a customer order ADSL through VDSL compatible equipment and furthermore notifies that he wishes to alter the service to VDSL within 60 days then a setup fee will not be collected for the change.



Access to wholesale switch

Setup charge for Access Option 1	ISK 93,000

The setup fee is composed of costs for setup and connection of the 1st port in each wholesale switch for Access Option 1. The setup fee for each port in excess of the first port is collected according to the Mila tariff for billed hours and service.

The charge for the cost of set up and connection of ports which are used for services other than Access Option 1 are collected according to the Mila tariff for billed hours and service.

Monthly fee

Port	Monthly charge per port	
1 Gb/s	9,289	
10 Gb/s	14,862	

The monthly charge is composed of capex and opex for a wholesale switch.

9.2.3 Settlement of temporary prices

In accordance with the PTA Decision no. 38/2012 the final settlement between parties for the difference between temporary prices and final prices according to this cost analysis will take place within one month from the date of this Decision. The following table specifies the temporary prices and the prices according to this cost analysis and the period of validity to be used as a reference in settlements between parties.

Table 9.1 Period of validity of tariffs for settlement

Service	Temporary price	Price 1. February to 31. July 2013	<i>Price as from</i> 1. <i>August 2013</i>
Connection, Option 1 (upper frequency range)	Monthly unit price	Monthly unit price	Monthly unit price
ADSL access, per user	ISK 911	ISK 885	ISK 912
VDSL access, per user	ISK 1,093	ISK 885	ISK 912
Multicast, Option 1	Monthly price for 1 Mb/s	Monthly price for 1 Mb/s	Monthly price for 1 Mb/s
Reserved bandwidth for each Mb/s per DSLAM	ISK 12.51	ISK 13.63	ISK 13.63
VoIP, Option 1	Monthly unit price	Monthly unit price	Monthly unit price
VoIP service per user	ISK 50.00	ISK 55.85	ISK 55.85
Wholesale switch, Option 1	Unit price	Unit price	Unit price
Set-up fee	ISK 250,000	ISK 93,000	ISK 93,000
Access to a wholesale switch	Monthly price	Monthly price pr. port	Monthly price pr. port
1 Gb/s port	ISK 14,777	ISK 9,289	ISK 9,289
10 Gb/s port	ISK 18,538	ISK 14,862	ISK 14,862



9.2.4 Relationship to the local loop access price

In order to be able to operate on the local loop access market (Market 4) one needs to make very significant investments in one's own electronic communications infrastructure while on the other hand it is possible to participate in Market 5 at a relatively low cost. To be able to offer broadband services the service provider can develop his own system in part or in full and/or purchase a variety of wholesale access from operators of networks and/or systems. Wholesale access can mean anything from the leasing of local loops from the network operators to pure resale of ready-made service packages to end users.

If one compares local loop price and bitstream price according to Access Option 1 and Access Option 3 where on one hand only the upper frequency range is leased (shared access) and on the other hand full access to the local loop is paid for, that is to say also for the lower frequency range, then the following comes to light.



Figure 9.1 Comparison of price between local loop and Access Options 1 and 3

In the opinion of the PTA the tariff for varying access levels of bitstream access is in appropriate context with local loop price as in the company's cost analysis increased capex and opex are taken into account when climbing the ladder of investment.

9.2.5 Comparison with analogous service

When deciding price the PTA has taken into account an analogous service which is considered to be operated in an efficient manner and which is based on the design of NGA network. The PTA has compared the new Mila bitstream prices with the tariff of Gagnaveita Reykjavíkur (GR) for bitstream access over fibre-optic local loops. GR has developed a new fibre-optic access system in the capital city area and surrounding in the past years and has achieved almost 40% market share in bitstream access in its area of operations.



The above specified price comparison indicates that the GR tariff for fibre-optic access is higher per user than the existing Mila tariff for bitstream access, but is has to be kept in mind that these are not entirely comparable services. The PTA cannot see that the above specified amendment to the tariff for bitstream access using DSL technology through copper local loops will hinder development of access through fibre-optic local loops. If one specifically takes into account the price rise in VDSL connections through Access Option 3, which is closest to being analogous to what GR is offering, then the price rise will in all likelihood have a positive impact on further Mila developments of its next-generation access network, and in addition to this it will strengthen the competitive position of bitstream access against fibre-optic local loops. The above specified development of the building of the fibre-optic network are in accordance with the objective of Directives from the EU Commission and from ESA, to support investment in next-generation access networks (NGA).¹⁴

9.2.6 Comparison between wholesale and retail prices

As the relevant wholesale market contains important supply items that are intended to support competition on related retail markets, the PTA closely monitors interaction between the wholesale market and the relevant retail market for the purpose of supporting active competition and ensuring that there is a sufficient difference in price between the amended wholesale prices and related retail prices.

In connection with the Decision on tariff for bitstream access the PTA assessed the price difference between wholesale and retail prices within the Skipti Group (Mila and Siminn) where Siminn, as the retail arm of the group, has 64% market share in network connections with xDSL technology which is 51% of the total number of network connections regardless of the technology used.

Figure 9.2 shows the relationship between access prices in wholesale and retail for Internet services. In comparison, the least expensive Siminn Internet service was used which is called basic subscription and which is a 12 Mb/s ADSL Internet connection with unlimited domestic download and 1 GB foreign download. The price includes webmail, email address and Internet connection.

¹⁴ See the following recommendations from the EU Commission: Commission Recommendation of 20.9.2010 on Regulated Access to Next Generation Access Networks (NGA) og Commission Recommendation of 11.9.2013 on Consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment.





Figure 9.2 Comparison between wholesale and retail

In the above specified figure 9.2 it can be seen that the lowest retail price for Siminn Internet service is 120% higher than the new wholesale price according to Access Option 3¹⁵. On the other hand one must keep in mind that included in the Siminn retail price is both retail costs and costs for various kinds of service including costs for bitstream access. These are among other things costs for:

- ICC transit to foreign countries (for example for equipment, service agreements, traffic charges, measurements of traffic and access to submarine cable).
- Internet service (for example for access control, post service, data storage, network protection and traffic control).
- Interconnection of networks.
- Sales and marketing (for example for discounts for larger customers, for equipment, advertising and marketing material).
- Accounts relationships with customers and funding of accounts receivable.
- Write-offs of accounts receivable.
- First level service with customers (for example for service desk and fault diagnosis).
- Information Systems.
- Other operations (for example for senior management, office operation, salaries and premises).

In the opinion of the PTA the wholesale pricing of bitstream access is conducive to creating leeway for competition on the retail market related to wholesale of bitstream access. The retail

¹⁵ Lowest Síminn retail price is 90% higher than the current wholesale price for ADSL service according to Access Option 3.



of bitstream belongs first and foremost to the market for Internet connections. Comparison of prices is however subject to certain difficulties as there are many and varied service configurations and the services on offer from each company vary. In figure 9.3 here below a comparison of retail prices of the most common service options of the main providers on the market for Internet connections is shown. It should be pointed out that in addition to the charge for Internet connection, the user pays a monthly fee in the range of ISK 1,690-2,950 for access to the fixed line in question which can serve voice telephony, TV etc. in addition to Internet.



Figure 9.3 The price of the main service offers of Internet companies, October 2013¹⁶

When one examines the above price comparison it can be seen that smaller parties on the market offer the most advantageous prices and the largest party on the market, Siminn, normally has the highest prices. The above indicates that there is leeway for smaller and/or new parties to the market when one considers the pricing of the main operators in the matket.

9.2.7 Cost analysis of Access Option 2

As the PTA considers that demand is beginning to emerge for Access Option 2, it considers it necessary to commence a review of cost analysis of Access Option 2. The existing tariff for Access Option 2 is partly based on the price for connecting users with DSLAM and this part will change in accordance with changes to the tariff for Access Option 1. The tariff for Access Option 2 is a based on cost of transit through the backbone network and the PTA considers it proper that this part of the tariff be reviewed and submitted to the PTA no later than three

¹⁶ The figures represent foreign download that is included. Domestic download is in all cases unlimited. Foreign download is not the same everywhere but was approximated to the most common instances. Hringiðan has 20GB and not 10GB niðurhal in ADSL and capacity in fibre-optic is 40Mb/s and 80Mb/s respectively. Hrindu offers 100 Mb/s by fibre optic.



months from the publication of this Decision, in accordance with the obligation for a price control in the PTA Decision no. 8/2008.

The new tariff for Access Option 2 shall be in line with the new tariff for Access Options 1 and 3. Should Mila provide access in accordance with Access Option 2 before the cost analysis is completed, the existing tariff will be used as a reference and then a retrospective adjustment will be made from the time that the Access Option was taken into use until a new tariff has come into force.

9.2.8 Annual review of the Mila wholesale tariff for bitstream access

Regular review of the Mila cost analysis along with clear criteria on which the cost analysis is based are intended to ensure balance in the recovery of costs and to support clear, transparent and predictable arrangment, in order to strengthen competition and promote investments and innovation.

In order to ensure predictability and transparency in the tariff for bitstream access in each instance the PTA will review the Mila cost analysis in question annually in accordance with the following main principles while the obligation for price control is force on a company with significant market power on the relevant market (Market 5). The next review of Mila's cost analysis will be 6 months after the entry into force of the forthcoming PTA Decision on market 5 and then annually after that point in time.

9.2.9 Main rules for cost analysis methodology

When reviewing cost analysis for the Mila tariff for bitstream access with DSL technology the following main rules shall be applied:

- Cost analysis shall cover access with DSL technology (such as ADSL and VDSL standards), according to Access Options 1-3.
- Basic price for bitstream services for general Internet service (best effort) without endpoint equipment shall be shown and the price for transmission of TV material (multicast) and IP telephone service (VoIP).
- In addition to the above the Mila tariff shall contain as a minimum the price for all bitstream services and for connections provided today to its own service departments or to other related parties or parties cooperating with Mila and to other electronic communications companies.
- The cost base shall be Mila historical costs (HCA) based on the preceding financial year in each instance.
- The methodology shall be based on allocating all costs to the service in question (FAC).
- Allocation of costs is based on separation of accountancy for wholesale bitstream service, on Mila asset bookkeeping and on costs from the company's bookkeeping system where operational costs are entered into chart of accounts.



- The operational costs (OPEX) of the bitstream system shall be captured, including the share in indirect costs, that is to say management and IT in accordance with separation of accountancy.
- When assessing investments (CAPEX) the replacement cost of the operational assets shall be used taking into account the next generation of access networks (NGA).
- Evaluation of the lifetime of operational assets shall reflect the use value of assets.
- The tilted annuity depreciation method shall be used to calculate annual costs for operational assets. It is authorised to use the tilted annuity depreciation method based on an estimate of the gross replacement cost (GRC) of the bitstream system.
- The cost of the total number of connections and bandwidth is calculated.
- Real return on investment shall be used as a reference, based on WACC real¹⁷ from capital tied in assets used in connection with providing service where the risk premium reflects the risk related to operations on the relevant market.
- It is authorised to assume that a working capital is tied up for 30 days to assure normal operations.
- The average unit cost for individual bitstream access service is calculated as an average cost for the whole country on the basis of allocated operational and capital costs having taken into consideration varying Access Options, number of connections and bandwidth.

The PTA furthermore plants to prescribe the above specified main rules and some additional rules in a detailed manner in its description of implementation of cost analysis for bitstream access in the obligation for price control in a draft market analysis for Market 5 which the PTA has prepared and which will soon be sent to ESA for consultation.

¹⁷ Pursuant to Article 16 of Regulation no. 564/2011 the PTA annually decides the weighted average cost of capital (WACC) to be used by electronic communication companies in their calculations.



The Decision

The Post and Telecom Administration endorses the Mila ehf. cost analysis with the amendments prescribed in this Decision.

Unit prices shall be as shown in Appendix I to this Decision and shall apply for Mila ehf. bitstream access and wholesale switches until the new cost analysis has been made.

The new Mila ehf. tariff shall come into force at the end of the month after the publication of this Decision. The tariff shall be part of the Mila ehf. reference offer for bitstream access when the PTA has endorsed the reference offer in question.

In accordance with the PTA Decision no. 38/2012 the final settlement between parties for the difference between temporary prices and final prices according to this cost analysis will take place within one month from the date of publication of this Decision. The settlement shall allow for a price of ISK 885 for connection according to Access Option 1 (upper frequency range of local loop) from and including 1 February 2013 to and including 31 July 2013 and ISK 912 from and including 1 August 2013. In settlement for TV service, VoIP and wholesale switches, prices shall be used as specified in Appendix I and specified in chapter 9.2.3.

Mila shall renew its cost analysis for Access Option 2 and the analysis shall be completed and submitted to the PTA no later than three months from the publication of this Decision. The new tariff for Access Option 2 shall be in line with the new tariff for Access Options 1 and 3. Should Mila provide access in accordance with Access Option 2 before the cost analysis was completed, the existing tariff shall be used as a reference and then a retrospective adjustment will be made from the time that the Access Option was taken into use until new tariff has come into force.

Mila shall update its cost analysis for the market for bitstream access annually during the period of validity of the PTA Decision no. 8/2008. When reviewing cost analysis for the Mila tariff for bitstream access with DSL technology the main rules prescribed in Section 9.2.9. shall be applied.

This Decision can be appealed to the Appellate Committee for Electronic Communications and Postal Affairs, see Article 13 of Act no. 69/2003 on the Post and Telecom Administration. The appeal shall have reached the Appellate Committee four weeks from the time that the party in question became aware of the Decision of the Post and Telecom Administration.



Costs for an appeal are according to Paragraph 5 of Article 13 of the same Act, and in addition to this there is a special appeal charge to the amount of ISK 150,000 to be paid pursuant to Article 6 of Regulation no. 36/2009 on the Appellate Committee for Electronic Communications and Postal Affairs.

Reykjavík, XX ,XX.2014

Appendix I: Wholesale prices for bitstream Access Option 1 and 3

- Appendix II: Conclusions of the PTA consultation on the Decision with respect to cost analysis for bitstream access according to Access Options 1 and 3
- Appendix III: Additional consultation on specific changes to Preliminary Draft Decision with respect to cost analysis for bitstream access according to Access Options 1 and 3
- Appendix IV: Conclusions of the additional PTA consultation on the Decision with respect to cost analysis for bitstream access according to Access Options 1 and 3
- Appendix V: Comments from ESA



Itemisation

Cost split by service activities[...]